FAA Aviation

AVIATION SAFETY FROM COVER TO COVER

Getting the Maximum from Personal Minimums

U.S. Department
of Transportation

**Federal Aviation
Administration**

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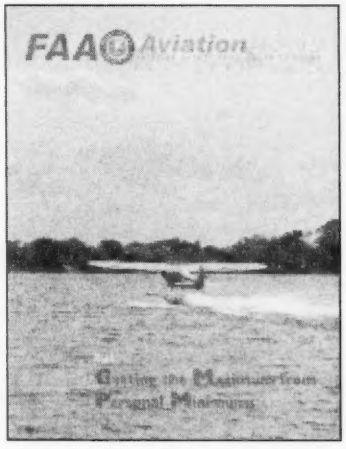


FRONT COVER: You too can make a splash this summer by learning how to fly a seaplane. For a list of training facilities, you can check the Seaplane Pilots Association Web site at http://www.seaplanes.org/. (H. Dean Chamberlain photo)

BACK COVER: Although most pilots add single-engine seaplane to their certificate as an add-on rating, there are multiengine seaplanes available such as this UC-1 Twin Bee amphibian operated by SPS Palm Coast, Inc., at the Flagler County Airport, Flagler, Florida. (Raymond Stinchcomb photo)

Getting the Maximum from Personal Minimums

story and photos by Susan Parson

You don't have to be involved in aviation very long before you hear the time-honored advice on personal minimums. It goes something like this: "Legal weather minimums are just a starting point. You should establish your own personal minimums for flying, and you must have the discipline to stick to them—no matter how much you want to make the trip."

Sound familiar? It's good advice. Most pilots would agree that it's a good idea, and it's probably true that more accident pilots—not to mention their innocent passengers—might be alive today if they had followed it. So why didn't they? And why do so many pilots who appear for flight reviews or other training look sheepish and make excuses for why they haven't managed to write down their own personal minimums?

There are probably many reasons that the concept of personal minimums is more honored as an idea than as a regular practice. I suspect, however, that a major reason is that many pilots—even safety-conscious ones—don't have a clear idea about where to start, and that many flight instructors—even conscientious ones—may not know how to guide pilots through the process of establishing personal minimums. I confess that I have been guilty on both counts. I consider myself to be a safety-minded pilot, but for too many years my personal minimums were little more than a vague mental notion. I also like to think of myself as a conscientious and safety-minded flight instructor (CFI), but far too few of my clients would be able to tell you that I even talked about, much less taught about, personal minimums. To make amends, here are some ideas that might help fellow aviators avoid similar sins of omission.

Let's start with the basics. What exactly do we mean when we talk about "personal minimums?" In formal terms, personal minimums refers to an individual pilot's set of procedures, rules, criteria, and guidelines for deciding whether, and under what conditions, to operate (or continue operating) in the National Airspace System.

While this definition is accurate, there are several reasons why you may not find it particularly helpful as a starting point. First, it tends to describe the product rather than explain the process, which is where many pilots have trouble. Second, and more importantly, the formal definition of the end product—your personal set of procedures, rules, criteria, and guidelines—does not really convey one of the core concepts: personal minimums as a "safety buffer" between the demands of the situation and the extent of your skills.

Think of personal minimums as the human factors equivalent of reserve fuel. When you plan a flight, the regulations require you to calculate fuel use in a way that leaves a certain minimum amount of fuel in the tanks when you land at your destination or

your alternative. The reserve fuel is intended to provide a safety buffer between fuel required for normal flight and fuel available to avoid total quiet in your engine compartment.

In the same way, personal minimums should be set so as to provide a solid safety buffer between the skills required for the specific flight you want to make, and the skills available to you through training, experience, currency, and proficiency. In fuel calculations, you wouldn't dream of planning a flight that would force you to use your reserve fuel, or (worse) take you to the "unusable fuel" level in the tanks. In skill calculations, you shouldn't consider making a flight that requires use of skills at the "reserve" or (worse) "unusable fuel" level of your piloting ability.

So where do you start in developing personal minimums? There is no single "right" way to proceed, but if you're unsure of how to proceed in establishing your own personal minimums, this method offers a reasonable place to start.

Step 1 – Review Weather Minimums

Most people think of personal minimums primarily in terms of weather conditions, so begin with a quick review of weather definitions. The regulations define weather flight conditions for visual flight rules (VFR) and instrument flight rules (IFR) in terms of specific values for ceiling and visibility.

Category	Ceiling		Visibility
Visual Flight Rules VFR (green sky symbol)	greater than 3,000 feet AGL	and	greater than 5 miles
Marginal Visual Flight Rules MVFR (blue sky symbol)	1,000 to 3,000 feet AGL	and/or	3 to 5 miles
Instrument Flight Rules IFR (red sky symbol)	500 to below 1,000 feet AGL	and/or	1 mile to less than 3 miles
Low Instrument Flight Rules LIFR (magenta sky symbol)	below 500 feet AGL	and/or	less than 1 mile

For our purpose, we will define IFR as a ceiling less than 1,000 feet AGL and/or visibility less than three miles. LIFR is a sub-category of IFR. VFR is defined as ceiling greater than 3,000 feet AGL and visibility greater than five miles. MVFR is a sub-category of VFR.

Step 2 – Assess Your Experience and Comfort Level

At first glance, this part of the process might look a bit complicated, but please bear with me. It might take a few minutes to review, record, and summarize your personal experience, but I think you will find that the finished product is well worth your time.

First, think back through your flight training and complete the "Certification Training, and Experience Summary" chart on the next page. The Certification, Training, and Experience Summary Source is adapted from the FAA's *Personal and Weather Risk Assessment Guide* (October 2003). It can be found at:

<www.faa.gov/education_research/training/fits/guidance/media/Pers%20Wx%20Risk%20Assessment%20Guide-V1.0.pdf>.

Next, think through your recent flying experiences and make a note of the lowest weather conditions that you have comfortably experienced as a pilot in your VFR and, if applicable, IFR flying in the last six to 12 months. You might want to use the charts below as a guide for this assessment, but don't feel that you need to fill in every square. In fact, you may not have, or even need, an entry for every category. For example, suppose that most of your flying takes place in a part of the country where clear skies and visibilities of 30 plus miles are normal. Your entry might specify the lowest VFR ceiling as 7,000, and the lowest visibility as 15 miles. You may have never experienced MVFR conditions at all, so you would leave those boxes blank.

In my part of the country, normal summer flying often involves hazy conditions, but over relatively flat terrain. I

know the local terrain and, since I have regularly operated in hazy daytime MVFR conditions (e.g., 2,500 and four miles), I would use the MVFR column to record these values. Even in my home airspace, though, I would not consider flying down to VFR minimums at night—much less in the range of conditions defined as MVFR. For night VFR, I would not be comfortable with anything less than a ceiling of at least 5,000, and visibility of at least seven to eight miles. How my entries would look in the Experience & "Comfort Level" Asseement VFR & MFR chart:

If you fly IFR, the next part of the exercise is to record the lowest IFR conditions that you have comfortably, recently and regularly experienced in your flying career. Again, be honest in your assessment. Although I have successfully flown in low IFR (LIFR) conditions--down to a 300 foot ceil-

Experience & "Comfort Level" Assessment VFR & MVFR			
Weather Condition		**VFR**	**MVFR**
Ceiling		**> 3000**	**1000-3000**
	Day	--	2,500
	Night	5,000	--
Visibility		**> 5 miles**	**3-5 miles**
	Day	--	4 miles
	Night	8 miles	--

Certification, Training, and Experience Summary

CERTIFICATION LEVEL	
Certificate level (e.g., private, commercial,ATP)	
Ratings (e.g., instrument, multiengine)	
Endorsements (e.g., complex, high performance, high altitude)	
TRAINING SUMMARY	
Flight review (e.g., certificate, rating, Wings)	
Instrument Proficiency Check	
Time since checkout in airplane 1	
Time since checkout in airplane 2	
Time since checkout in airplane 3	
Variation in equipment (e.g., GPS navigators, autopilot)	
EXPERIENCE	
Total flying time	
Years of flying experience	
RECENT EXPERIENCE (last 12 months)	
Hours	
Hours in this airplane (or identical model)	
Landings	
Night hours	
Night landings	
Hours flown in high density altitude	
Hours flown in mountainous terrain	
Crosswind landings	
IFR hours	
IMC hours (actual conditions)	
Approaches (actual or simulated)	

ing and 3/4 mile visibility—I would never claim to have been "comfortable" in these conditions, especially since I was operating in a single pilot/single engine configuration. I would therefore leave the LIFR boxes blank, and my entries for known "comfort level" in Instrument Meteorological Conditions (IMC) would be as shown below:

Experience & "Comfort Level" Assessment IFR & LIFR			
Weather Condition		**IFR**	**LIFR**
Ceiling		**500-999**	**< 500**
	Day	800	--
	Night	999	--
Visibility		**1-3 miles**	**< 1 mile**
	Day	1 mile	--
	Night	3 miles	--

If I combine my entries into a single chart, the summary of my personal known "comfort level" for VFR, MVFR, IFR, and LIFR weather conditions is as follows:

Experience & "Comfort Level" Assessmen t Combined VFR & IFR					
Weather Condition		**VFR**	**MVFR**	**IFR**	**LIFR**
Ceiling					
	Day	2,500		800	
	Night	5,000		999	
Visibility					
	Day	4 miles		1 mile	
	Night	8 miles		3 miles	

Step 3 – Consider Other Conditions

Ceiling and visibility are the most obvious conditions to consider in setting personal minimums, but it is also a good idea to have personal minimums for wind and turbulence. As with ceiling and visibility, the goal in this step is to record the most challenging wind conditions you have comfortably experienced in the last six to 12 months—not necessarily the most challenging wind conditions you have managed to survive without bending an airplane. As shown in the chart to the right, you can record these values for category and class, for specific make and model, or perhaps both.

In addition to winds, your "comfort level" inventory should also include factors related to aircraft performance. There are many variables, but start by completing the chart with reference to the aircraft and terrain most typical for the kind of flying you do most. Remember that you want to establish a safety buffer, so be honest with yourself. If you have never operated to/from a runway shorter than 5,000 feet, the "shortest runway" box should say 5,000 feet. We will talk more about safe ways to extend personal minimums a bit later. (See chart on the right.)

Step 4 – Assemble and Evaluate

Now you have some useful numbers to use in establishing baseline personal minimums. Combining these numbers the Baseline Personal Minimims chart on the next page shows how the whole picture might look.

Step 5 – Adjust for Specific Conditions

Any flight you make involves almost infinite combinations of pilot skill, experience, condition, and proficiency; aircraft equipment and performance; environmental conditions; and external influences. Both individually and in combination, these factors can compress the safety buffer provided by your baseline personal minimums. Consequently, you need a practical way to adjust your baseline personal minimums to accommodate specific conditions. See the chart on page 6 for an example of how this can be done.

Note that the suggested adjustment factors are just that—a suggestion. If your flying experience is limited or if you don't fly very often, you might want to double these values. In addition, if your situation involves more than one special condition from the chart above, you will probably want to add the adjustment factor for each one. For example, suppose you are planning a night cross-country to an unfamiliar airport, departing after a full workday. If you decide to make this trip—or you might decide that it is safest to wait until the next day—this chart suggests that you should at least raise your baseline personal minimums by adding 1,000 feet to your ceiling value; one mile to visibility, and 1,000 feet to required runway length.

How about adjustments in the other direction? Some pilots fear that establishing personal minimums is a once-and-for-all exercise. With time and experience, though, you

Experience & "Comfort Level" Assessmen t Wind & Turbulence				
		SE	**ME**	**Make/ Model**
Turbulence				
	Surface wind speed	10 knots	15 knots	
	Surface wind gusts	5 knots	8 knots	
	Crosswind component	7	7	

Experience & "Comfort Level" Assessment Performance Factors			
	SE	ME	Make/ Model
Performance			
Shortest runway	2,500	4,500	
Highest terrain	6,000	3,000	
Highest density altitude	3,000	3,000	

Baseline Personal Minimums				
Weather Condition	**VFR**	**MVFR**	**IFR**	**LIFR**
Ceiling				
Day	2,500		800	
Night	5,000		999	
Visibility				
Day	4 miles		1 mile	
Night	8 miles		3 miles	
Turbulence	**SE**	**ME**	**Make/Model**	
Surface Wind Speed	10 knots	15 knots		
Surface Wind Gust	5 knots	8 knots		
Crosswind Component	7	7		
Performance	**SE**	**ME**	**Make/Model**	
Shortest runway	2,500	4,500		
Highest terrain	6,000	3,000		
Highest density altitude	3,000	3,000		

can modify personal minimums to match growing skill and judgment. When you have comfortably flown to your baseline personal minimums for several months, you might want to sit down and assess whether, and how, to safely push the envelope. If, for instance, your personal minimums call for daytime visibility of at least five miles, and you have developed some solid experience flying in those conditions, you might consider lowering the visibility value to four miles for your next flight.

Two important cautions:

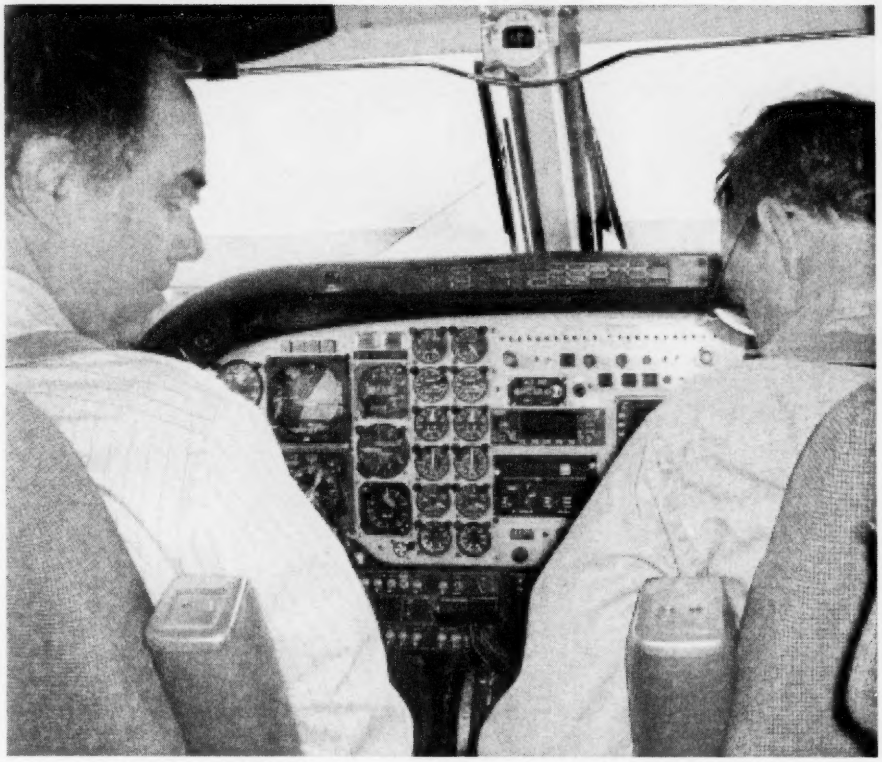
- First, never adjust personal minimums to a lower value for a specific flight. The time to consider adjustments is when you are not under any pressure to fly, and when you have the time and objectivity to think honestly about your skill, performance, and comfort level during last the few flights. Changing personal minimums "on the fly" defeats the purpose of having them in the first place.
- Second, keep all other variables constant. For example, if your goal is to lower your baseline personal minimums for visibility, don't try to lower the ceiling, wind, or other values at the same time. In addition, you never want to push the baseline if there are special conditions (e.g., unfamiliar aircraft, pilot fatigue) present for this flight.

You might find it helpful to talk through both your newly-established personal minimums and any "push-the-envelope" plans with a well-qualified flight instructor.

Step 6 – Stick to the Plan!

Once you have done all the thinking required to establish baseline personal minimums, "all" you need to do next is stick to the plan. As most pilots know, that task is a lot harder than it sounds, especially when the flight is for a trip that you really want to make, or when you are staring into

the faces of your disappointed passengers. Here's where personal minimums can be an especially valuable tool. Professional pilots live by the numbers, and so should you. Pre-established hard numbers can make it a lot easier to make a smart "no go" or "divert" decision than a vague sense that you can "probably" deal with the conditions that you are facing at any given time. In addition, a written set of personal minimums can also make it easier to explain tough decisions to passengers who are, after all, trusting their lives to your aeronautical skill and judgment.



Susan Parson is a Special Assistant in Flight Standards' General Aviation and Commercial Division and an active general aviation pilot and flight instructor. She welcomes your thoughts and ideas on best practices for establishing and adjusting your personal minimums. Send comments to: <susan.parson@faa.gov>.

	If you are facing:	Adjust baseline personal minimums by:	
Pilot	Illness, use of medication, stress, or fatigue; lack of currency (e.g., haven't flown for several weeks)	Add	*at least* 500 feet to ceiling
			at least ½ mile to visibility
Aircraft	An unfamiliar airplane or an aircraft with unfamiliar avionics or other equipment:		*at least* 500 ft to runway length
enVironment	Unfamiliar airports and airspace; different terrain or other unfamiliar characteristics	Subtract	*at least* 5 knots from winds
External Pressures	"Must meet" deadlines, pressures from passengers, etc.		

Baseline Personal Minimums					
Weather Condition		VFR	MVFR	IFR	LIFR
Ceiling					
	Day				
	Night				
Visibility					
	Day				
	Night				
Turbulence		SE	ME	Make/Model	
	Surface Wind Speed				
	Surface Wind Gust				
	Crosswind Component				
Performance		SE	ME	Make/Model	
	Shortest runway				
	Highest terrain				
	Highest density altitude				

	If you are facing:	Adjust baseline personal minimums to:	
Pilot	Illness, medication, stress, or fatigue; lack of currency (e.g., haven't flown for several weeks)	Add	At least 500 feet to ceiling
			At least ½ mile to visibility
Aircraft	An unfamiliar airplane, or an aircraft with unfamiliar avionics/ equipment:		At least 500 ft to runway length
enVironment	Airports and airspace with different terrain or unfamiliar characteristics	Subtract	At least 5 knots from winds
External Pressures	"Must meet" deadlines, passenger pressures; etc.		

Federal Aviation Administration

Getting the Maximum from Personal Minimums

Step 1 – Review Weather Minimums

Step 2 – Assess Your Experience and Personal Comfort Level

Step 3 – Consider Other Conditions

Step 4 – Assemble and Evaluate

Step 5 – Adjust for Specific Conditions

Step 6 – Stick to the Plan!

Category	Ceiling		Visibility
VFR	greater than 3,000 feet AGL	and	greater than 5 miles
Marginal VFR	1,000 to 3,000 feet AGL	and/or	3 to 5 miles
IFR	500 to below 1,000 feet AGL	and/or	1 mile to less than 3 miles
LIFR	below 500 feet AGL	and/or	less than 1 mile

Think of personal minimums as the human factors equivalent of reserve fuel. Personal minimums should be set so as to provide a solid safety buffer between the skills required for the specific flight you want to make, and the skills available to you through training, experience, currency, and proficiency.

Review and record your certification, training, and recent experience history on the chart below.

CERTIFICATION LEVEL	
Certificate level (e.g., private, commercial, ATP)	
Ratings (e.g., instrument, multiengine)	
Endorsements (e.g., complex, high performance, high altitude)	
TRAINING SUMMARY	
Flight review (e.g., certificate, rating, Wings)	
Instrument Proficiency Check	
Time since checkout in airplane 1	
Time since checkout in airplane 2	
Time since checkout in airplane 3	
Variation in equipment (e.g., GPS navigators, autopilot)	
EXPERIENCE	
Total flying time	
Years of flying experience	
RECENT EXPERIENCE (last 12 months)	
Hours	
Hours in this airplane (or identical model)	
Landings	
Night hours	
Night landings	
Hours flown in high density altitude	
Hours flown in mountainous terrain	
Crosswind landings	
IFR hours	
IMC hours (actual conditions)	
Approaches (actual or simulated)	

Summarize values for weather experience and "comfort level" in the chart below, and enter values for turbulence & performance.

Experience & "Comfort Level" Assessment Combined VFR & IFR					
Weather Condition		VFR	MVFR	IFR	LIFR
Ceiling					
	Day				
	Night				
Visibility					
	Day				
	Night				

Experience & "Comfort Level" Assessment Wind & Turbulence				
		SE	ME	Make/ Model
Turbulence				
	Surface wind speed			
	Surface wind gusts			
	Crosswind component			

Experience & "Comfort Level" Assessment Performance Factors				
		SE	ME	Make/ Model
Performance				
	Shortest runway			
	Highest terrain			
	Highest density altitude			

SUN 'N FUN HIGHLIGHTS

FAA Administrator Marion C. Blakey answers questions from the audience following her remarks at the annual Meet the FAA forum at the FAA Safety Center and Production Studio

story and photos by H. Dean Chamberlain

Now that the first large fly-in of the year is over, Sun 'n Fun in Lakeland, Florida, I wanted to provide a few comments based upon my observations there. These include the first visit of the FAA Administrator to the fly-in, the media briefing by Sean Tucker about his parachute jump from his damaged aircraft during a practice flight in Louisiana, and my personal observation and opinion.

Meet the FAA

FAA Administrator Marion C. Blakey visited the Sun 'n Fun Fly-In at Lakeland, Florida, for the first time on Friday, April 7. While there, she met with a room full of visitors during the annual "Meet the FAA" session at the FAA Safety Center and Production Studio. Southern Regional Administrator Carolyn Blum introduced Blakey along with Linda Baker, Deputy Director of the Aircraft Certification Service; John Allen, Deputy Director of the Flight Standards Service; Steve Wallace, Director of Accident Investigation; and Dr. Fred Tilton, Federal Air Surgeon. Blakey and the other FAA employees were there to discuss current issues and to answer questions from the audience.

As part of her opening remarks, Blakey said Sun 'n Fun was one of the better places she has been invited to attend. In thanking everyone for their support during her visit, she said the hospitality extended to her was great.

During her comments, Blakey addressed several important general aviation (GA) issues.

One was the continuing need to reduce the GA fatal accident rate. Commenting on the general aviation fatal accident rate, Blakey noted that the trend was improving. The goal for this fiscal year was no more than 337 fatal GA accidents. She said there have been 129 fatal accidents so far this year and that weather, maneuvering, and decision-making errors continue to be the largest factors. Pilots continue to head into weather they are not trained for, she said.

Although she discussed the need for a secure funding method to support FAA services, probably the most interesting topic to many of those at Sun 'n Fun was her comments about Light Sport activities. As she said, "Whenever I get together with a GA group, it is one of the first things to come up. I am real happy to say we are making progress day after day." At one point she recognized Tom Poberezny, the President of the Experimental Aircraft Association (EAA), who was in the audience and reminded everyone of the important role EAA played in the development of the Light

During his media briefing at Sun 'n Fun, Sean Tucker holds up the parachute he used to bail out of his stricken aircraft. Tucker bailed out of his aircraft while practicing his routine in Louisiana.

Sport rule.

According to information provided by the FAA Light Sport Aviation Branch in Oklahoma City, since the implementation of the Light Sport rule on September 1, 2004, the number of Sport Pilot examiners continues to increase. Eight Sport Pilot Examiner initial courses were held in 2005. Forty-two Sport Pilot examiners were designated as a result of the training. Additionally, one hundred and ten designated examiners have added Sport Pilot authority to their authorizations. Six more initial examiner courses will start in June 2006.

As of March 2006, there are 64 flight instructors with Sport Pilot privileges and 234 certificated Sport Pilots.

Six Designated Airworthiness Representative-Light Sport Aircraft courses have been held with 43 Designated Airworthiness Representatives with Light Sport Aircraft certification privileges appointed. These representatives are needed to help certificate new Light Sport aircraft.

The number of Sport Pilot instructors, examiners, and airworthiness representatives increase daily.

Sean D. Tucker Bails Out

By now, probably everyone in aviation has heard that Sean D. Tucker bailed out of his disable Oracle *Challenger* aircraft while practicing near Shreveport, Louisiana on April 5. He said it was his second day of training in the Louisiana aerobatic box when at about 20 feet off the ground he did about a 10 and a half "G" pull into the vertical line at about 225 miles an hour and "whap" the controls froze. At about 150 feet the airplane suddenly went up about 55 feet, he said. "I thought my stick had broken," he said. After a few minutes, he was able to look out and realize the wings were still flying. "I intuitively grabbed the trim tab and I pulled it. The plane was getting ready to stall and I pushed it down. Now I was up above 1,000 feet which was a pretty good feeling," he said. "Now I had time." He said above 1,000 feet getting out of an airplane is pretty manageable. "Now I could talk to people on the ground for a second opinion," he said. Their advice was to get away from the trees. You don't want to land a parachute in trees. Both Tucker and the aircraft landed in safe areas.

Tucker told of his accident in a media briefing at the Sun 'n Fun Fly-In. He brought his opened parachute and a piece of his aircraft to show everyone during the morning briefing.

The important information was that he was not injured and that he will resume his air show performances in about two months. He will use his back up aircraft, but, as he said, he is taking a short break and it will take him a few weeks of practice to regain his air show edge in the different aircraft.

He made several important points

in his briefing. He said they had modified and strengthened the tail of the aircraft over the winter. Apparently, one of the connecting fittings on the elevator torque tube failed during the high "G" maneuver. The result was a jammed control. He was able to use his trim tab to control the aircraft enough to gain altitude. He said once he could climb to a 1,000 feet he felt a little more comfortable. Although the aircraft kept oscillating, he eventually was able to climb to more than 9,000 feet. He was in constant radio contact with his crew on the ground and one member was able to get in another aircraft and fly high cover over the damaged aircraft. Because of the limited control he had of the aircraft, the decision was made for him to bail out of the aircraft. But, as he said, "Twenty five minutes is too long to think about bailing out of an aircraft." During that time, a safe site was found in the area to jump out of the aircraft and he reviewed the process to be used. As he said, "I didn't want to save my life while having my aircraft hurt someone on the ground." While police on the ground blocked traffic, Tucker prepared to bail out. His ground crew reminded him to keep his head down while releasing the canopy. He said it was good that he had a helmet on because even though he had his head down, the canopy did hit his helmet. He said he wondered what might have happened if he had not been wearing a helmet. He was able to successfully bail out of the aircraft and fly his square parachute to a safe landing. He said, "I would like to say I made a perfect stand up landing—I didn't." In spite of not doing an air show stand up landing, he was not injured.

In reviewing this incident, I think several safety issues come to mind. First is having the piloting skill to have a successful outcome in case of a survivable accident. In Tucker's case, being able to fly the aircraft with only trim control probably saved his life by allowing him to gain the altitude for a successful bail out. Then the fact he was wearing a helmet prevented a potentially serious head injury when he jettisoned the canopy. His being in radio contact with his ground crew gave him alternative plans and courses of action to consider. Finally, when the decision to bail out was made, the crew support on the ground and in the air reduced the risk to anyone on the ground as well as providing a quick response to picking him up. Although he said he didn't want to see his aircraft destroyed, this bailout seemed text book perfect. It also seems a text book example of good crew resource management. Tucker and those on the ground, as well as in the air, all worked together for a successful outcome to what could have been a potentially fatal accident.

Editorial Comment

This leads me to a general comment or observation about this first large fly-in of the year. In the more than 30 plus years I have been attending fly-ins and air shows, the number of aircraft manufacturers at any given event remained about constant. You had the homebuilt plan providers and the kit manufacturers. You also might have an air carrier or military manufacturer at the event. But you definitely would have one or more of the traditional certificated GA manufacturers at the event. Most were American companies. Piper, Beechcraft, and Cessna come to mind. Although these companies continue to attend these shows, there have been changes over time. For example, it is now the New Piper Company that attends the shows rather than the old Piper.

This year's Sun 'n Fun highlighted something new and exciting in aircraft manufacturing—a trend that has been developing over the past few years. Names such as Cirrus, Diamond, Columbia, Eclipse, and a host of new Light Sport companies and high performance kit manufacturers are leading today's general aviation development. From new very light jets to light sport aircraft, aviation is changing. Considering the Light Sport rule is less than two years old, the number of Light Sport companies and their unique aircraft designs are simply amazing. Many of these Light Sport aircraft are being designed and manufactured in Europe. Add in the number of companies offering some type of flat panel display or GPS capability, and you can begin to see the future of GA. I found it interesting that one manufacturer's representative of an aircraft with advanced technology installed did say there is still a place for the traditional instrument panel in working aircraft. He said there are areas of the world where the ability to easily repair a VFR aircraft is more important than having the latest flat panel display. As he said, more mechanics have access to traditional instruments in remote areas than the new systems, so there is a continuing need for traditional working aircraft. But the trend is there. From the aircraft on static display to the avionics vendors showing their latest equipment in the various warehouses, the future seems flat along with the latest model of GPS. (Maybe the flat earth folks are right...the world is becoming flat.) Then if you add in some high tech weather data services along with the associated satellite radio systems, the future does indeed look flat with great fidelity. The only challenge left is how to pay for all of the digital services available for today's cockpit. From GPS updates to weather services to music, the future is here today.

Finally, I noticed many families with very young babies and children at the fly-in. Although I question the wisdom of bringing a baby to an air show because of the noise, heat, and possibly many hours of constant sun exposure, I want to remind everyone of the benefits of making sure you drink plenty of water when you are at an air show as well as using plenty of sun block with a high protection index number. If you are a pilot spending many hours in a non-air conditioned cockpit on a hot summer day, and sailplane pilots are especially vulnerable in their gliders, it is critical you drink plenty of water. Dehydration, heat exhaustion, or even sun stroke can jeopardize the safety of your flight.

Have a safe 2006.

An Airport That Cares

by H. Dean Chamberlain

In the spirit that the major news networks say when doing a story about their parent corporation, I must say that I once worked for the airport manager in this story before he retired from the FAA. My aircraft is also based at the airport. Having said that, this story is about a dynamic airport manager and the director of airport maintenance, a pro-airport Maryland county council and a very aviation-minded Maryland Aviation Authority. At the heart of this story is a growing regional general aviation airport located within yards of a Chesapeake Bay watershed tidal stream. For those who have never been to the Eastern Shore of Maryland, it is the area east of the Chesapeake Bay that stretches to the Atlantic Ocean. Long known for its wildlife, what makes this area unique is that three states—Delaware, Virginia, and Maryland—all share parts of this region. Locally, the combined region is known as the Delmarva Peninsula.

The Easton/Newnam Municipal Airport (ESN) is a Talbot County, Maryland, owned and operated airport on the west side of the Town of Easton. The airport has two intersecting runways, one of which is 5,500 feet long. The airport serves a host of general aviation aircraft from small, fixed-gear, single-engine aircraft to large corporate type jets. In the near future, a contract control tower is in the airport's construction plans. With an Instrument Landing System (ILS), GPS approaches, and a non-precision approach, the airport has all-weather capability.

Adding to the mix of aircraft using the airport is the number of transit aircraft that fly into the airport for training, as well as the number of pilots or crewmembers who fly into the airport to enjoy the on-field restaurant. What makes Easton so popular in the post 9/11 flight environment is the fact is it located outside of the Washington Area Air Defense Identification Zone (ADIZ). Any given weekend, you can see just about every type of aircraft you might be interested in. From jets bringing families to enjoy their country homes to helicopters flying around the airport to pilots flying their former Eastern Block *Yak* warbird trainers to students making their first cross-country flights, Easton Airport has a lot to offer to everyone.

Recognizing the growing importance of the airport and its proximity to the Chesapeake Bay, and the Bay's importance to the local economy as well as providing the perfect summer dining experience of "blue" crabs, Airport Manager Mike Henry and Director of Maintenance Jack Chaires developed a three-year plan to install the first fuel-truck containment system at the airport. Based upon the latest Environmental Protection Agency standards in Title 40 Code of Federal Reg-

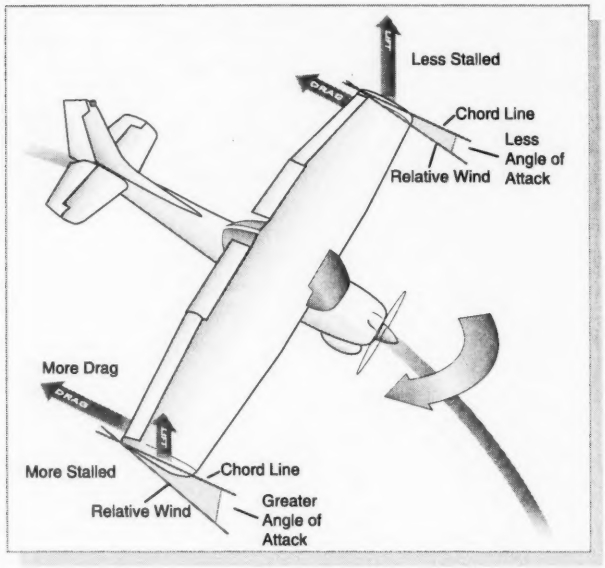
ulations Part 112 for Spill Prevention, Control, and Countermeasures (SPCC) Plan requirements, the newly installed fuel containment system is designed to hold any unattended spill from the fuel trucks permitted to operate on the airport. Due to airport weight limitations, the maximum size of the fuel trucks based at Easton is limited to 3,800 gallons. Because of this limitation, the fuel containment system was designed to be able to contain 110 percent on the worst-case scenario. In this case, the system was designed to hold 4,500 plus gallons. This amount was based upon the maximum amount of fuel in a truck plus an amount for the worst-case 20-year average rainwater event. As a secondary containment system, the system is designed to protect against any spills from the trucks parked overnight on the containment area.

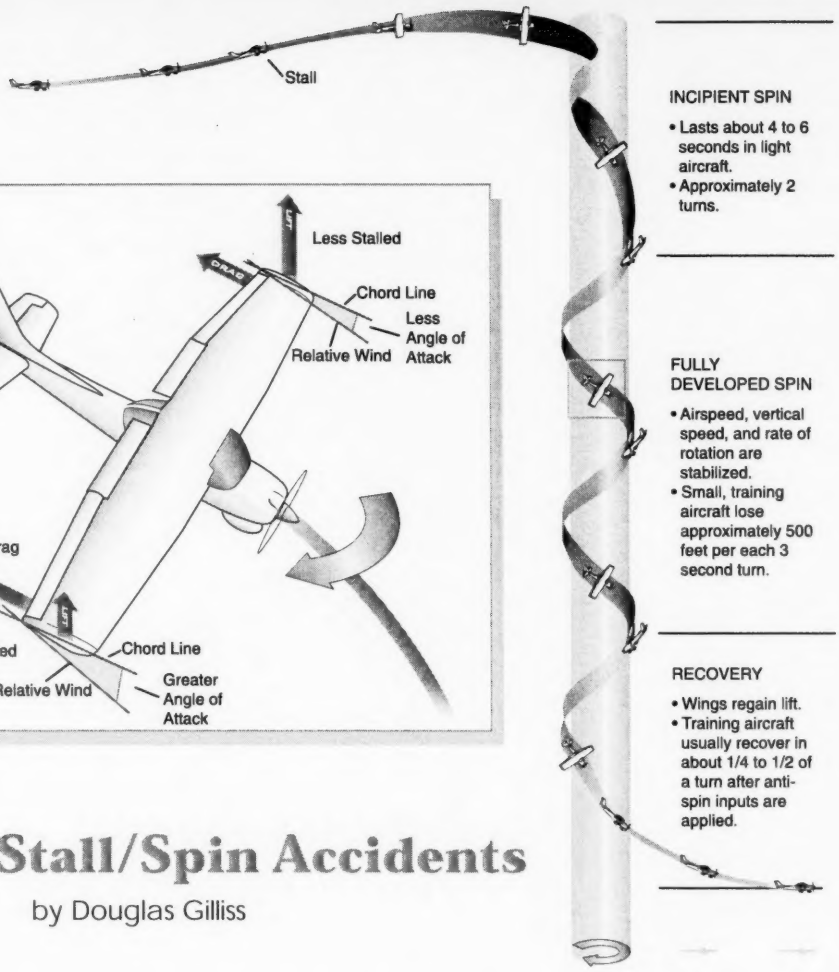
The interesting thing about the containment area is what is not visible to the casual observer. At first, if you are not familiar with the construction of the system, you would just see a large concrete pad surrounded by your typical airport asphalt ramp area. Upon closer examination, you will notice the 40- by 120-foot area is actually a pit with about a two-inch bump up curb or lip at the front of the pad which faces the taxiway. There is also a varying depth area with a maximum depression of about 12-inches sloping towards where the drain is located. The whole pad has a surface area that can contain about 4,100 plus gallons of liquid. On the surface, the approximately $110,000 concrete pad looks just like any concrete parking area. But looks can be deceiving.

The creative part of this containment system lies beneath the surface. Although the construction photographs with this article highlight the 40 days or so of construction, the engineering drawing shows the magic or physics involved in the system. Since the purpose of the containment area is to prevent fuel from contaminating the surface water running into the Chesapeake Bay, there has to be a way to block any spilled fuel from flowing into the nearby watershed. Like most built-up areas surrounding the Bay, the airport has a surface water drainage system that permits rainwater to flow into the underground storm drain system. Any fuel that might leak from a parked fuel truck could, during a rainstorm or if the leak was a major leak, flow into the Bay's watershed by running into the storm water drainage system. In an area that idolizes its Bay and the harvest it produces, this possible fuel contamination was unacceptable to the environmental-conscious Airport Advisory Board and the airport's management. Five years ago, for example, the airport took steps to protect against any fuel leakage from its fuel farm that surpassed then current environmental standards.

So how does a concrete pad protect the Bay? As shown in the cross section detail drawing, any fuel and water contamination that might leak onto the ground will flow into the catch basin and drain located in the deepest part of the pad. The water and fuel mixture then would flow to a large pre-cast concrete manhole with the "magic" oil stop valve. The gravity-operated valve is ingenious in its simplicity. Since there is a difference in the specific gravity or density between water and fuel, the valve reacts to the difference between the two fluids. In the presence of water the valve remains open allowing the water to flow into the connected nearby storm-water drain system. If the valve senses fuel, the valve closes and prevents the flow of fuel into the storm-water drainage system. Being a mechanical valve, the system is not dependent upon electricity. So the loss of electrical power, during a storm, for example, would not result in any contamination. And based upon the volume of the containment pit, when the valve closes because it senses fuel, the spilled fuel would be contained in the pit until workers can properly remove it. The simplicity of the system is simply elegant.

Not only is the system the model of simplicity, but also it was built without the use of Federal funds. The airport and the State of Maryland each contributed 50 percent of the construction costs with the engineering work done by the Talbot County Engineering Department. This project is a good example of how environmentally responsible local government organizations from the airport to its Airport Advisory Board to the local County Council to the Maryland Aviation Administration's Office of Regional Aviation Assistance can all work together to not only protect a vital and sensitive environmental area, such as the Chesapeake Bay, but at the same time they are all working together to promote the responsible use of a vital regional general aviation airport. This intergovernmental cooperation shows once again that general aviation can be a responsible neighbor.




Stall
INCIPIENT SPIN
• Lasts about 4 to 6 seconds in light aircraft.
• Approximately 2 turns.
FULLY DEVELOPED SPIN
• Airspeed, vertical speed, and rate of rotation are stabilized.
• Small, training aircraft lose approximately 500 feet per each 3 second turn.
RECOVERY
• Wings regain lift.
• Training aircraft usually recover in about 1/4 to 1/2 of a turn after anti-spin inputs are applied.

No More Stall/Spin Accidents

by Douglas Gilliss

Same Accidents

"Witnesses reported seeing the airplane bank sharply toward the runway, only a short distance from the airport and close to the ground, and then rapidly reverse direction with the nose of the aircraft going down so it was pointing almost straight toward the ground. Then the airplane hit the ground and burst into flames. All on board were lost." Reports similar to this one describe a stall and resulting spin that occurred close to the ground—another accident from an aircraft turning to line up with the runway while exceeding the limits of safe flight. Looking at 100 accident reports and scrutinizing details of the type of aircraft, the airport location, and more, doesn't offer much insight, other than it has happened once again.

Each occurrence is, of course, a tragedy. However, the greater tragedy is that this accident report can be practically put on a hand stamp and reapplied to numerous fatal aircraft accidents, year after year after year. The only aspect of some of these accident reports is the N-number of the aircraft and the unfortunate pilot and passengers who are on board the plane and the name of the airport.

Who Is To Blame?

We must be doing something wrong. Pilots, flight instructors, flight examiners, regulators, inspectors—somebody must be able to reverse a significant cause of fatal aircraft accidents. The accidents are not limited to a region nor by type of aircraft either. These fatalities are repeated in light planes, twins, light jets, warbirds—rarely in airliners, though. The subject has received much attention and corresponding regulatory, training, and certification changes over the last fifty years with some, but not a dramatic, improvement in eliminating this loss of life.

Whom do we blame? Naturally, the pilot flying the aircraft that crashes is to blame, but it's worth digging deeper into the whole civil aviation system to see if improvements can be made. What is missing in the aviation community's background, skills, attitudes, or practices that permit these accidents?

Let's first examine why the accidents occur, the physical causes, then we can attempt to apportion blame or, better than that, address remedies. It's ambitious to eliminate all such accidents, but responsible to attempt to significantly reduce their numbers. A

new approach may accomplish the task.

Physical Causes

An AOPA/Air Safety Foundation study of 465 accidents from 1991 to 2000 and an FAA study of 1,700 stall/spin accidents confirmed the same data, about 80 percent of the stall/spin accidents occur at 1,000 feet or less. It looks like traffic pattern altitudes and it is worth addressing the common errors for pilots executing a poorly flown pattern and related training accidents. Let's skip illegal low flying, "buzzing," agricultural application flights, and air show aerobatics, all performed at low altitude, but outside of the normal traffic pattern procedures flown by the majority of pilots. And we can disregard commercial airline operations, their safety data differs from average civil aviation flying.

Staying within basic aerodynamic principles and common pilot practices to seek sources for these accidents is not difficult. An airplane needs to be stalled and receive a control input to produce yaw and it will spin. Not surprisingly, if it spins close to ground, typically in the traffic pattern, insufficient altitude will be available for the pilot to recover before hitting the ground. In essence, stall close to the ground, input yaw, spin, and the airplane is in an unrecoverable situation.

A simple analysis would conclude that the airplane that is put into a spin arrived there from two fundamental, yet improper, control actions: too slow a speed (causing the stall) and uncoordinated flight (inducing the yaw), which guarantees a spin. The solution appears simple as well. Do not fly too slow in the traffic pattern. Does that mean we can identify a speed for each aircraft and then state and enforce, "do not fly below ___ knots or you may risk injury and death?" It's not that easy.

All aircraft have other control dimensions besides speed that will produce an unsafe flight condition that could cause a stall. I still hear the old adage flight instructors often parrot, "The airplane will stall at any speed and in any flight attitude..." Maybe not an easy feat, but theoretically possible. If you can stall the aircraft and add yaw, then you can spin it in many different attitudes as well.

The Numbers

The stall/spin envelope of any airplane is expansive when we view additional contributing factors besides simply speed. For example, bank angle and the force of gravity (G's) contribute to a higher stall speed than the one the aircraft has in level flight or in an unaccelerated (one G) shallow turn. The effects of a steep turn illustrate the increased stall speed. A level 60-degree bank turn requires two G's. With that gravitational force applied, the stall speed becomes 1.4 times the level flight stall speed. (The stall speed increases by a multiple equal to the square root of the G force. Two G's produces a multiple of approximately 1.4. For purists, it is 1.414213562.) For a light aircraft that stalls at 50 knots, the steep bank, level turn stall speed becomes 70 knots—a significant increase for the unprofessional or inattentive pilot who pulls back on the controls too hard or abruptly.

For the panicked pilot, hoping to jerk the aircraft around to line up with the runway, who would at one point might reach four G forces during the abrupt pull on the controls, the stall speed would double (the square root of four Gs produces a multiple of two for the stall speed). In an airplane with a 50-knot stall speed such a pull would cause the airplane to stall at 100 knots. Since it is unlikely the airplane would be traveling at least 100 knots near a final approach path, that pilot could count on an accelerated stall, from which recovery may be difficult close to the ground. If the abrupt movements on the controls are not coordinated, a spin would certainly result—with no potential for recovery.

So our stall/spin victims have not succumbed to their fate from just low airspeed, we know that bank angles and G forces have, most likely, contributed too. We know what caused the airplane to crash, but why do the pilots permit the airplane to get in such a flight condition? Our real concern, the issue that has apparently baffled the aviation community, is, what can we do to prevent pilots from getting into such life-threatening situations?

Past Efforts

The stall/spin accident history has not been ignored. Data has been accumulated, statistics have been compiled, and regulations have been changed. Safety programs have been initiated and advisory circulars have been distributed. Let's review some of the approaches used to combat this potential for fatal accidents.

1. Spin Training

Training, if accomplished satisfactorily, should lead to proficiency. Training pilots to effectively recover from spins would, one would expect, provide them with the skills to recognize and recover from spins. The data appears to contradict that assumption. Spin training for private pilot applicants was required in the U.S. until 1949. At that time the requirement was dropped. Many professionals claimed it was the wrong thing to do; however, the number of spin accidents, perhaps surprisingly, fell from that time to the present.

2. Spin-Proof Airplanes

Interestingly enough, it is possible to significantly reduce the probability that an airplane will spin by redesigning the wing. NASA works on projects of this type and tested the common Cessna, Piper, Beechcraft, and Grumman American light planes decades ago. Basically, and perhaps oversimplifying a description of the process, designers added a drooped leading edge that aided the wing in delaying the stall to the wing tips of the airplane, improving low speed controllability and resistance to a stall/spin scenario.

Conclusions were that, first, the economics of spin-proofing airplanes did not merit redesigning the light aircraft—a notable increase in cost to avoid what was mostly a pilot technique in causing accidents would not pay off. NASA pilots could fly the

modified aircraft throughout a wide range of speed and bank angles without experiencing a stall/spin in the airplanes. Could lesser-experienced civil pilots do they same? And would customers pay more for the aircraft? (American auto manufacturers, attempting to cooperate with Congress and federal regulatory agencies for autos, reviewed the data for "crash proof" cars in the 1970s. They reached the same conclusion—the potential for benefit did not justify the cost. For instance, would you pay $100,000 for a car that gets 10 miles per gallon, has a roll cage like a race car and could survive a 50-mile per hour head-on collision with another similar behemoth?) So, besides the economics of the redesigns not proving worthwhile, there would, predictably, still be airplanes destroyed and lives lost from poor pilot techniques.

Limiting light aircraft to a two-seat configuration also seemed to assist in spin-proofing. Again, though, the feasibility of producing only two-seat light aircraft seemed short sighted from both the consumer's and manufacturers' perspective.

Today, there are parachute-equipped airplanes (the Cirrus Airframe Parachute System) that have probably saved lives, but in most cases the airplane is a total loss—a contributing factor to safety, but not a complete answer. Pilots still wreck airplanes of all kinds.

3. Instructor Training

Currently, instructors must have demonstrated proficiency in spin recognition and recovery by either an endorsement by the recommending instructor for their CFI check flight, or by accomplishing the maneuvers on the check flight with an examiner. You would think that would be beneficial.

Another interesting set of data comes from a study of fatal, stall/spin training accidents. In a whopping 91 percent of the cases reviewed by the Air Safety Foundation (40 of 44 accidents) instructors were on board the aircraft. So having a trained CFI in the cockpit is still no assurance of avoiding stall/spin accidents. They occur even on training flights, which raises a few more issues, such as instructor proficiency, currency and standards for permitting students to depart from a safe flight envelope.

4. Pilot Training

Pilot training for general aviation pilots has improved. Supplemental training materials, safety training and reference materials—articles and studies—are all high quality references for reducing all types of accidents. Training syllabi, especially in Title 14 CFR part 141 schools, is very standardized and monitored. Skills taught to new pilots are, for the most part, explained and practiced by the students during training.

Students and Airline Transport Pilots (ATP) make up only a small portion of the pilots involved in these fatal accidents. It is no surprise that student pilots rarely are involved in a stall/spin fatal accident. They (we can hope or expect) are enthusiastic, flying frequently, and studying procedures. They know they will be called upon to demonstrate proficiency by their instructors. It also may be reasonable to conclude that the trained, experienced, and usually active ATPs do not fit in the potential stall/spin accident group of pilots. If they actively are working, they must pass check flights and fly.

By certificate category, commercial pilots and private pilots make up the vast majority of those who have had stall/spin accidents.

5. Procedural Training and Tips

If you read the popular aviation magazines, you won't have to wait long before clear, well-written techniques for avoiding stall/spin accidents will once again appear. Spin recovery techniques that are infallible for the majority of airplanes fill the pages, and they make a lot of sense. Current, active, professional pilots read and follow them, as they don't stall and spin into the ground. But then they are not the pilots who wreck airplanes in stall/spin accidents—at least by the demographic data. It's the inactive or undisciplined pilots who often do not participate in safety training programs or read aviation publications who have safety challenges.

Remedies

Given all the efforts to prevent stall/spin accidents, from pilot training to airplane modifications, none have dramatically reduced the number of fatal accidents in that category. However, we can learn from the data and conclusions that make sense from those accidents and the studies performed over the years. Let's now apply that data and those conclusions to make a plan that will save lives.

Knowing that many of the past programs implemented to reduce stall/spin accidents have made contributions, learning from them, and applying the accident data, we can start with some basic premises from which we will be able to formulate a real strategy. The strategy will have to be both simple to understand and to apply. First, the fundamentals.

Guidelines

1. The plan must not create more risks than it eliminates.

We do not want to create more risks. I have seen too many simulated engine-out approaches and heard too many stories where practicing for an emergency was as dangerous, or more so, than the real thing.

2. Must be economically feasible.

Remembering NASA's valiant efforts to produce a spin-proof airplane, it is unrealistic to believe that a very expensive or comprehensive change in pilot check outs, initial licensing requirements, or other costly or difficult hurdles for general aviation pilots to conquer would actually be successful. For two reasons: one, because the cost would deter pilots from either flying altogether or encourage some workaround; and two, wide-sweeping modifications in the current scheme of certifying and monitoring pilots would fail administratively for lack of support.

3. Must be easy to implement the

program nationwide

A complex or sweeping change will not be implemented, limiting even valid techniques and concepts, since few pilots or instructors will adopt it. Ease of use must be a primary goal.

4. Must consist of more than pilot flight control techniques.

There are hundreds, if not thousands, of how-to articles, circulars, flyers, and training materials for spin avoidance, recognition, and recovery. One more may be enlightening to the flying community, but will probably be read by those who do not need the training to stay alive.

5. Must be easy to understand and simple to apply.

If a change is suggested in flying procedures, techniques, or regulations, it must be straightforward enough to be embraced by the majority of pilots and flight instructors. New, complex, regulations take a long time to develop and are not always immediately understood by pilots. Any stall/spin-accident prevention program would need ready acceptance by those who can effect change in the aviation community—and they would have to do it with credibility, or it will not work.

Certainly there are many other criteria experts could apply to develop such a program to reduce stall/spin accidents. However, rather than spend more time and resources to exhaust the possible list of relevant criteria, let's assemble a simple plan that will get results.

Three-Step Plan

Three of anything seems easy to remember, so that's a plus. I suggest three steps that all meet the criteria we established above. The concept is simple, but its implementation is the challenge. It will only work if all the pilots and instructors who learn of the plan exercise the discipline to make it work. It's worth the effort because lives are at stake.

Step 1 – Set Standards

There are in place now precise standards for flying light aircraft at the private pilot skill level, specifically including turns, traffic patterns, and stalls and spin awareness. The FAA sets them, and to earn a private pilot certificate all pilots must meet them. Advisory circulars offer detailed guidance, including stall/spin awareness and recommendations. Included in the standards are specific airspeed, altitude, and heading tolerances for each maneuver. For example, a pilot must keep their altitude within +/- 100 feet and airspeed within -5/+10 knots. Bank angles are specified too. All pilots are supposed to maintain these standards on their check flight. What happens after the check flight? Have you ever flown with a licensed pilot who does not maintain these standards?

Any pilot who flies within the standards set by the Private Pilot Practical Test Standards flies safely. We must assume that they follow the federal aviation regulations and exercise good judgment as well.

The standards exist and are widely available. Of course, you say, everyone knows them. Okay, it's just Step 1; let's go on.

Step 2 – Maintain The Standards

This step is the most difficult and probably the most critical. The standards are known, available, and easily recognized and recalled by pilots in training and by flight instructors. So they are no mystery. Safe flight mandates adherence to these standards. Let's see what we can do about that. It involves discipline, a human character trait that is often challenging to exercise for everyone.

The first exposure to safe flight guidelines—let's call them safety standards—that new pilots experience is from flight instructors. What ever tolerance level the flight instructor accepts, is what the new pilot will adhere to. If the instructor is lax about flying on an assigned or planned altitude, the student will follow the example set. If the instructor flies precisely, but tolerates the student flying outside the prescribed limits throughout their training, the message to the student is clear—precise aircraft control is not important. After all, they may think, I can takeoff and land the airplane without difficulty most of the time. That attitude is established early in a person's flying career, and it usually remains with them, unless they have some moving experience that changes their initial set of standards. They may be recommended for their practical check flight, flying within limits on some days—maybe even on the check flight. But if the standard for safe flight is not something they are convinced they need to follow, their flying will reflect it throughout their remaining flying experiences for years to come.

So our first area to focus on for keeping pilots safe (and certainly not the only one) is with flight instructors. (I am one so I am pointing at myself too.) It is too easy to tolerate flight performance outside the limits. Here are some glances at reality that will support what I say:

1. Economics

There are more than one type of analysis that surfaces here. First, the student, typically, pays the FBO for an airplane and instruction. If they are told indelicately about their progress and capabilities, they will either complain, quit flight training, or seek a competitor for training. So there is pressure to generate revenue from the CFI's boss and from the instructor himself/herself. Students today may be completing their training on a part-time basis, sometimes finances permitting—a flight this week, maybe not another until after payday, skipping a week. So they want results for their investment too. Definite pressure.

2. Intimidation

Besides the economic pressure instructors face, they can easily be intimidated by either the student, their boss, or time constraints of their own to get the student pilot to a specified proficiency level by a certain time or within a specific number of flight hours. More pressure.

3. Unwarranted Optimism

Hoping for the best, it's conven-

ient to assume or say to yourself, as an instructor, that the student will polish their skills with a little more experience; maybe they will improve after building their confidence from passing the check flight. It might occur, but is just as likely to not occur.

More rationalizations and real, but dangerous, assumptions enter into the flight training environment—no need to generate an extensive list—all of which contribute to a potential threat to safety at a later time.

Instructor standards, maybe call it tolerance, is the first hurdle to eliminating stall/spin accidents.

Closely related to the instructor's role in establishing safe flying standards are the examiners' activities, usually current or former instructors or aviation professionals themselves. Examiners have the distinction of serving as a safety net for the aviation community. If a prospective applicant does not meet the practical test standards for a certificate or rating, they have an obligation to require a retest on the unsatisfactory flight maneuvers. The vast majority must be doing just that because there are consistent percentages of applicants who require another check flight.

Pressures are on the examiners, though, similar to the flight instructors. As an examiner who has issued a pink slip, I know it's hard to tell pilots who are expecting to receive a certificate or rating that it rained on their parade, so to speak. It makes the examiner the "bad guy," and the examiner may feel uncomfortable issuing bad news. Some could believe that their reputation may suffer, translating into a loss of business. Rare, but it happens.

For the small number of instructors or examiners who feel pressured and may be intimidated, the answer could be easy. Just think, do you want to read about this person some time in the future failing to safely fly an airplane, causing an accident?

Be professional, stick to prescribed standards and the pressures may sometimes surface but will disappear. When a professional attitude is maintained, safety accompanies it. If you are comfortable with yourself, your standards, and communicate professionally, never belittling others, safety prevails and you remain comfortable.

Now for pilots. Their discipline, even skillful pilots, must be upheld long after their training. From attempting to research what works and what doesn't, it appears that there is some influence from peer groups in any activity. (If kids are in a peer group where it's not "cool" to do drugs, they typically don't do drugs.) If pilots in the local aviation community frown on show-off maneuvers, there won't be as many. If they share ideas about how to keep everyone safe—you and me included—it seems their efforts are successful. Acknowledging narrow escapes and "war stories" of sloppy flying, bad judgment or unwarranted risk taking as "okay," only encourages the undisciplined to repeat such incidents.

It takes discipline to seek a fellow pilot or instructor to assist in maintaining or building skills. Be willing to assist or refer pilots to professionals who can keep their confidence and skills up to known standards.

Step 3 – Currency

It's a sleeper of a cause for accidents, but an essential ingredient of a plan to stop stall/spin accidents. We have all read about pilots, who have wrecked airplanes, and learned they had not flown in months, or longer. Flying is a motor skill and a mental discipline. If you do not practice it your skills will deteriorate. You get "rusty."

Pilots who are not current increase their risk of departing from safe flying standards. Current under what standard? Good question. There is no currency standard if you fly a light aircraft by yourself; the reg's only protect unsuspecting passengers, paying or gratis, from the risks of a pilot who has not flown in more than 90 days.

Personal Currency

I would like to label a concept that is far more relevant than the passenger-carrying regulation when we are looking at preventing stall/spin accidents. I call it Personal Currency. I define it as the level of proficiency you have for the aircraft you are flying that keeps you safe. It may vary for each type of aircraft you fly.

Everyone's skills deteriorate as time accumulates since the last time you flew that type of aircraft. (Flying a large commercial jet or high performance military jet doesn't necessarily mean you are comfortable in a light aircraft, if you haven't flown it for several weeks or months.)

Each of us has to determine a realistic time interval between flights that will allow us to maintain safe, proficient flying in each type of airplane we fly. Personally, I have noticed differences in my skills, slower responses, etc., somewhere between two weeks and a month away from the cockpit. The time will vary between individuals, based on the pilot's flying history, ratings, and aviation background. We set it ourselves. That means self-discipline (that discipline thing again!) We are responsible for our safety. Others can help, encourage, instruct, or regulate us, but, ultimately, we set the standard for ourselves.

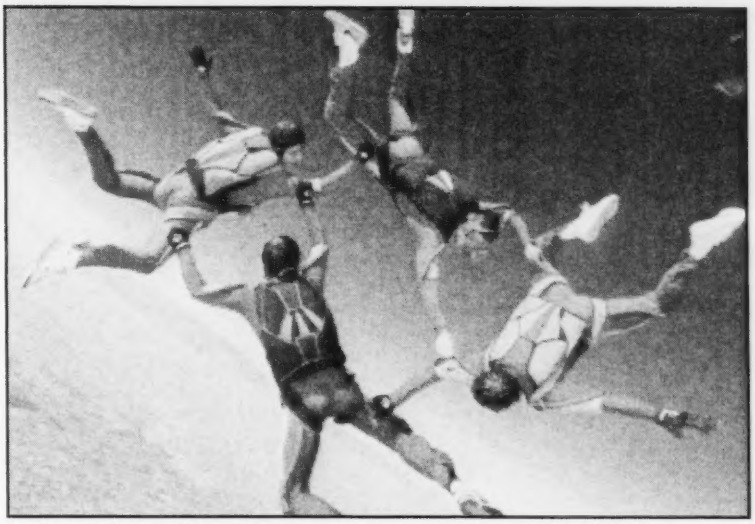
Action

Let's review the specifics of who should do what to make the no-accident program effective. First, the CFIs can exercise the effort necessary to establish standards and tolerate no lesser performance from their students. Ditto for examiners. Then the most difficult part: the discipline that all pilots must apply to maintain their proficiency and current flying skills. We can do it. Let's save lives.

Douglas Gilliss is a former USAF pilot, with Airline Transport Pilot (LR-JET) and CFII certificates, with Experimental Aircraft Ratings in AV-L29, AV-L39, CA HA-200 and N-T28 with more than 5,500 flight hours. He is a Designated Pilot Examiner for Experimental Jets and Safety Counselor. He holds Master of Business Administration and Juris Doctor Degrees and serves as Chairman of the Board of the Classic Jet Aircraft Association.

Parachutes—Or How to Let Yourself Down Gently

by H. Dean Chamberlain



Are you parachute smart or parachute legal?

Were you wearing an FAA-approved parachute the last time you executed an intentional maneuver in a civil aircraft that exceeded a bank of 60 degrees relative to the horizon or a nose up or down attitude of 30 degrees relative to the horizon with a passenger onboard?

If not, were you operating under the exclusion of Title 14 Code of Federal Regulation (14 CFR) section 91.307(d)? Maybe your maneuver was unintentional? So, did you violate the regulation?

Do you even know what the two exclusions are? Paragraph (d) of that regulation states "Paragraph (c) of this section does not apply to—(l) Flight tests for pilot certification or rating; or (2) Spins and other flight maneuvers required by the regulations for any certificate or rating when given by—(i) A certificated flight instructor; or (ii) An airline transport pilot instructing in accordance with section 61.67 of this chapter.

Then the rule states what an approved parachute is.

In typical regulatory prose, the complete rule states—

(a) No pilot of a civil aircraft may allow a parachute that is available for emergency use to be carried in that aircraft unless it is an approved type and—

(1) If a chair type (canopy in back), it has been packed by a certificated and appropriately rated parachute rigger within the preceding 120 days; or

(2) If any other type, it has been packed by a certificated and appropriately rated parachute rigger—

(i) Within the preceding 120 days, if its canopy, shrouds, and harness are composed exclusively of nylon, rayon, or other similar synthetic fiber or materials that are substantially resistant to damage from mold, mildew, or other fungi and other rotting agents propagated in a moist environment; or

(ii) Within the preceding 60 days, if any part of the parachute is composed of silk, pongee, or other natural fiber, or materials not specified in paragraph (a)(2)(i) of this section.

(b) Except in an emergency, no pilot in command may allow, and no person may conduct, a parachute operation from an aircraft within the United States except in accordance with part 105 of this chapter.

(c) Unless each occupant of the aircraft is wearing an approved parachute, no pilot of a civil aircraft carrying any person (other than a crewmember) may execute any intentional maneuver that exceeds—

(1) A bank of 60 degrees relative to the horizon; or

(2) A nose-up or nose-down attitude of 30 degrees relative to the horizon.

(d) Paragraph (c) of this section does not apply to—

(1) Flight tests for pilot certification or rating; or

(2) Spins and other flight maneuvers required by the regulations for any certificate or rating when given by—

(i) A certificated flight instructor; or

(ii) An airline transport pilot instructing in accordance with section 61.67 of this chapter.

(e) For the purposes of this section, approved parachute means—

(1) A parachute manufactured under a type certificate or a technical standard order (C-23 series); or

(2) A personnel-carrying military parachute identified by an NAF, AAF, or AN drawing number, an AAF order number, or any other military designation or specification number.

The key elements in this rule are civil aircraft, carrying any person (other than a crewmember), approved parachute, inspection dates, and the exclusions for instructional flights. The rule only applies to civil, not military aircraft. A person may be a required crewmember and, therefore, not a "person" as specified in the rule. And if you are receiving spin training for say a flight instructor rating, the rule does not require you to wear a parachute—although it might be a good idea if you have parachutes available. Years ago, an instructor was killed in a two place training aircraft when the rudder stop plate caught on the stop bolt and effectively locked the rudder hard over. The aircraft spun to the ground. Parachutes might have saved this pair, if they had been worn. But that statement is only speculative. No one will ever know what might have happened.

What brought this review to mind was a discussion at lunch recently about the increased use and availability of surplus military warbirds, such as the L39 jet aircraft, and their ejection seats. Or the fact that some of these aircraft that once had ejection seats

now are disarmed and have seats that no longer work. Adding to this confusion is the fact some of these warbirds are still painted with military markings that show ejection seats or rescue information that shows ejection seats as being functional or "hot." Although these aircraft may be more "military authentic" with their military markings, these markings may be confusing to passengers and first responders in the case of an emergency or accident. This is why it is important for passengers in these type aircraft to know and understand the safety features of the aircraft they are flying in and how to operate those safety features.

Although aerobatic pilots and some glider pilots routinely wear parachutes, I think the majority of pilots have never worn a parachute. I can say that the new parachute I recently purchased for my glider flights is not something I think about when packing my flight gear. But, since it has a 120-day inspection interval, I now find myself having to have it inspected and repacked before I even think about taking it to the glider field. And, unlike aircraft repairs, one can't routinely go to your local airport and find a certificated parachute rigger qualified to repack an emergency parachute. Unlike a skydiver's main parachute, emergency parachutes worn by pilots and skydivers must be repacked by an FAA appropriately rated parachute rigger.

I don't know how many pilots have ever made an emergency parachute jump, but I would guess the number is relatively few these days. The reliability of modern aircraft engines has removed the necessity to "hit the silk" like the pilots of yesterday had to do back in the 1920s, for example. So how does someone become proficient in wearing a parachute while not routinely practicing its use? To me, this falls into the same category of why we don't practice falling down stairs. It is just something where the risk doesn't seem worth the effort. So why would I want to practice jumping out of a perfectly good aircraft. It is not something I want to do. So what is someone to do?

According to Alan Silver, a parachute rigger, skydiver, and the person who sold me my parachute at Sun 'n Fun last year, anyone who puts on a parachute must learn a few basic parachuting tips. Tips that he explains to the people who attend his parachute safety seminars.

First, you must make sure the parachute is within its required inspection period. Emergency parachutes, like aircraft, have a logbook or record that shows the date of its last inspection. This small record is stowed in the parachute container for easy inspection.

Then Silver said the wearer must inspect the container for access and functionality to the D-ring or handle used to activate the opening process, as well as the small pins used to secure the container closed. The pins may or may not be protected by some type of closable cover. The pins must be functional, non-binding, and inserted into the appropriate retainer holes far enough to not inadvertently activate, but not binding to the point they can't be removed. The cable connecting the D-ring and the pins must be free and non-binding within its protective sheath.

Once you are satisfied the parachute is within its inspection period and functional, the third tip is to strap it on in accordance with its instructions. He said you want it to be tight. Once you have the parachute on and the chest and leg straps properly connected and adjusted, you then must connect your aircraft's seatbelt and shoulder harness.

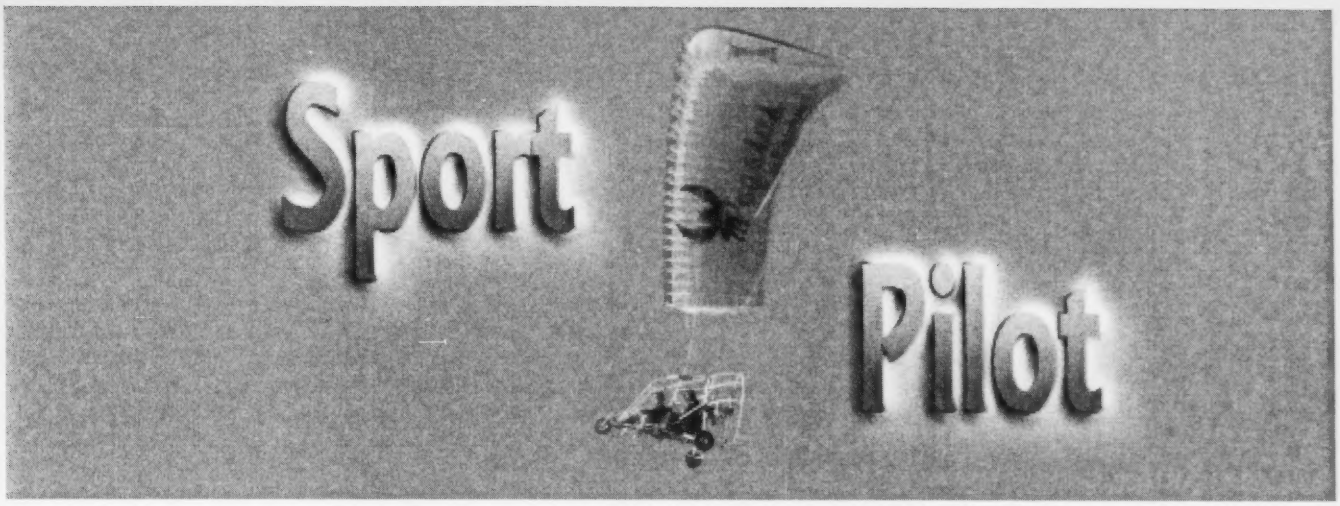
He emphasized the importance of knowing the difference between the aircraft's belts and your parachute's straps. You don't want to inadvertently release your parachute connectors when you jump over the side of your aircraft. A parachute doesn't help you, if you fallout of the harness on the way down.

Once you are in the aircraft, you need to simulate the steps you have to follow to exit the aircraft—such as releasing the aircraft seatbelts and shoulder harness, opening the canopy or aircraft door, and best way of exiting the aircraft.

The final tip once you are clear of the aircraft is to look for the D-ring and pull it hard with both hands. If the chute fails to open, continue to pull the D-ring while you attempt to find out why it is not working. As he said, in an emergency, you may have to fight your way out of the aircraft and keep trying to open the parachute all the way to the ground. Never give up is his lifesaving advice to those who attend his parachute classes.

When asked how to practice using a parachute without jumping out of a perfectly good aircraft, he gave the following advice. Each time you get out of your aircraft, you should simulate the steps necessary to exit the aircraft and simulate finding and pulling the D-ring. If you own the parachute and you are ready to send it to a rigger for inspection and repacking, he suggests that you should always practice actually opening the parachute to learn the feel of what it is like pulling the D-ring until the pilot chute ejects. Not only do you get the actual feel of the resistance of the D-ring and its connecting cable and pins, but you also know the rigger has to actually repack the chute. He said some unscrupulous riggers have been known to "pencil" inspect a parachute by just signing off the inspection record without ever opening the parachute. Sending an open chute to a rigger ensures that at least the rigger has had to put the chute back in its container. When opening your chute before sending it to your rigger, he said you should put down some kind of protective material or covering on the floor to protect your parachute canopy if it falls out of its protective case.

Like any safety device, if you don't know how to operate a parachute offered you for a flight, whether it is in a glider or high performance surplus warbird, you need to ask for instructions in its proper use and under what conditions you might have to exit the aircraft. A parachute is not something you want to learn how to operate by trial and error. The life you have to save just might be your own. Be parachute smart.



Light-Sport Aircraft/Sport Pilot Timelines are Approaching

by Larry Clymer

It is hard to believe that the Light-Sport Aircraft/Sport Pilot regulations have been in effect for over 18 months. With that realization we are fast approaching the first timeline in the program. The first timeline is the transition of ultralight pilots to sport pilots by January 31, 2007. Title 14 Code of Federal Regulations (14 CFR) section 61.329 allows for ultralight pilots who belonged to a FAA-recognized ultralight organization on or before September 1, 2004, to obtain sport pilot privileges in the aircraft category and class they are qualified by passing a knowledge and practical test. The FAA recognizes the experience obtained in flying ultralight vehicles. In order to meet federal standards the individual does have to undergo FAA standardization testing to ensure the individual is qualified to operate in the National Airspace System. There is not plan to extend this timeline.

The FAA's Light Sport Aviation Branch trained 42 Sport Pilot Examiners last year and has scheduled six examiner training classes this year to help meet this timeline. The existing Designated Pilot Examiner pool has stepped up to the plate and there are over one hundred of these subject matter experts who are also available to help ultralight pilots to obtain practical tests. To date there are more than 152 examiners qualified to perform sport pilot practical test. The real shortfall of examiners is in the powered parachute and weight-shift communities. The Light Sport Aviation Branch will focus on training more of these qualified candidates in the upcoming flying season to help those wanting to meet the January 31, 2007, timeline. The number of examiners, instructors, and other Sport Pilot designees increases daily.

The next important date is January 31, 2008. Two significant conversions need to be accomplished in order to continue in the program by this date. The first is the conversion of existing ultralight flight instructors to FAA certificated flight instructors with Sport Pilot privileges. The provisions of 14 CFR section 61.431 allow for registered ultralight instructors, who were members of an FAA-recognized ultralight organization on or before September 1, 2004, to obtain an FAA flight instructor certificate with a Sport Pilot rating by taking a knowledge and practical test. If the individual has already successfully passed a Fundamentals of Instruction (FOI) knowledge test given by the FAA-recognized organization and the organization attests to that fact, the individual does not have to take the FAA FOI knowledge test. In order to take the practical test the individual must hold a Sport Pilot or higher certificate in the category and class of aircraft. The individual takes the practical test from a Sport Pilot Flight Instructor Examiner.

The FAA's Web site <www.faa.gov> is the best source of accurate information on how to find a Sport Pilot Examiner for the category and class aircraft that you are interested in obtaining a Sport Pilot certificate. The FAA home page has a "Search" location at the top of the page. If you type in Light Sport Aviation Branch, it will take you to the information you need as far as the Sport Pilot and Light Sport Aircraft programs and the required forms. If you look to the right on the Home page, you will see a column titled "Top Requests." Under this column you can find under the subheading "Pilots" the title "License and Certificates." This area will take you to the practical test standards and knowledge test areas for Sport Pilot certification.

The second conversion with a January 31, 2008, limit is ultralight air-

craft certification requirements. Under 14 CFR section 21.191(i)(1) an ultralight vehicle that does not meet the definition of 14 CFR section 103.1 must be registered and certificated in order to continue to be flown in the National Airspace System. If you already own or are planning to buy an existing ultralight vehicle that does not meet the definition of 103.1, you need to start the process of getting the vehicle registered and certificated. This is a two part process. The first step is to register the aircraft using the FAA's Affidavit of Ownership, FAA Form 8050-88A. It is very important to make sure you complete this form accurately. The registration process can take as long as eight weeks. After the vehicle is registered, it is now considered an aircraft and you will receive an N-number to place on the structure. The next step is to arrange for the aircraft to be certificated as an Experimental Light Sport Aircraft (ELSA). There are currently 43 Designated Airworthiness Representatives (DAR) who are qualified to accomplish the certification. The Light Sport Aviation Branch is working on a program to get more DARs available by late summer of this year. This should help in the process of getting all the aircraft certificated by the January 31, 2008, timeline.

The FAA and industry organizations are working very hard to meet the timelines established by the September 2004 regulations. Some of the organizations have put together transition packages to assist pilots. They have also provided information on how to prepare your ultralight vehicle to meet FAA certification standards. Several individuals have established very good ground schools to help in preparing for the Sport Pilot and flight instructor knowledge tests. The Light-Sport Aircraft/Sport Pilot Program is on the road to success and is a good story on how the FAA and industry can work together to enhance safety in the National Airspace System.

Larry Clymer is the Manager of Flight Standards' Light-Sport Aviation Branch.

Minden-Tahoe Airport

story and photos by H. Dean Chamberlain

If you fly gliders (sailplanes), you probably have heard of Minden, Nevada. If you live in Nevada's Carson Valley or the nearby Reno area, you know where the airport is located. As the crow flies, it has to be a high-flying crow, the airport is just a few miles east of the 9,000 feet-plus mountain ridge that forms the eastern edge of the Lake Tahoe basin along the California-Nevada border.

For many in the soaring community, Minden is famous for the tremendous mountain-wave soaring that can be done in the area because of the nearby Sierra-Nevada Mountains. Located a few miles east of the Carson Range and in a large, flat high-desert valley, Minden is one of the select soaring sites in the nation. It offers both high-altitude mountain-wave flights, when wind conditions are favorable, as well as thermal flying over the desert and nearby hills and mountains. This section of Nevada along the eastern slope of the mountain range, as well as the valleys leading south across Nevada to California and east to Utah, provide some of the best cross-country soaring areas in the world. Many long-distance soaring flights have been flown in and near this three-state area.

For years, I had read of Minden in my soaring publications. Finally, while working last fall in the Reno area, I was able to drive to the airport. While there, I arranged for a dual flight in one of the gliders operated by the airport's soaring fixed based operator (FBO), Soar Minden. Taking off from the 4,726 feet MSL airport, the tow plane towed us west across the valley to the top of the nearby mountains along the eastern edge of Lake Tahoe. When we released from the tow, the view was spectacular. Imagine flying slowly at about 50 to 60 knots with no aircraft engine noise while looking at one of the most beautiful alpine lakes in the world nestled in a tree covered basin surrounded by 9,000 feet MSL peaks. The flight was breathtaking as we searched for lift across the mountain tops. Finally, running out of lift, we flew down the mountain side toward the airport located in the valley thousands of feet below us.

Seeing the postcard perfect lake and mountain views from the glider, I wondered what the future of the area would be like. I currently live in northern Virginia in the crowded Washington, DC, metro area, and I have lived in both southern and northern California. In each of these areas, commercial development and new home construction have really restricted general aviation. In many places, small general aviation airports have closed only to become the next housing development. I think one of the reasons is that when the small airports were built, they were in fact located outside of the nearby towns, but as the populations increased, so did the need for land. And in many cases, since pilots and airplanes like relatively flat landing areas, the small airports were built on pretty level land. Land that now makes good home sites. Today, the problem is that the towns have grown to the fence line of the airport, and the land is more valuable as a new subdivision than as a small airport. Add in the fact, not everyone one likes to have an airport as a neighbor, and you can see the problems facing many of today's general aviation airports. So as I drove south on Interstate Highway 395 out of Reno, down through Carson City, the Nevada state capital, and toward Minden and its airport, I wondered if this area would one day lose its unique position in American soaring because of the growth in homes and commercial development I saw along

-- All A Matter Of Planning

the highway and in the area while flying.

As is my custom when I can, I stopped into the Minden Airport's manager's office to see what might be for sale or what information might be available for transit pilots or visitors. While looking at the local material on display, I saw a program announcing a county planning meeting that mentioned the airport. Reading the announcement, it became apparent to me that the airport management and local community were very proactive by considering the airport and surrounding community needs in the Douglas County planning process. While talking to the office staff, I was introduced to Airport Manager Jim Braswell. When I asked him about the planning announcement, he was kind enough to take a few minutes out of his schedule to answer my questions.

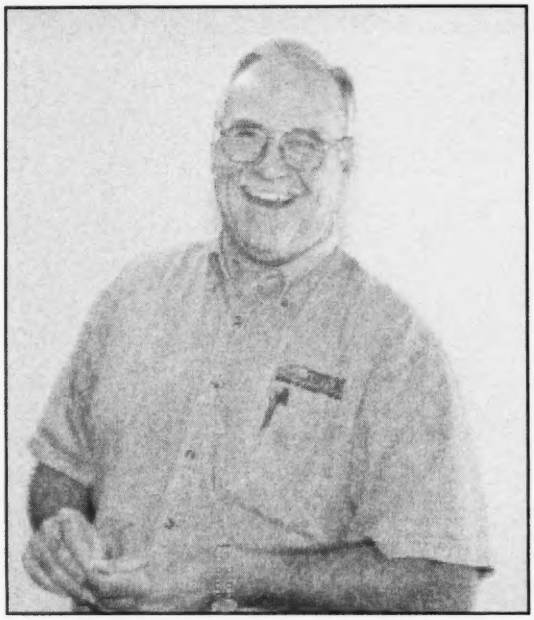
Since I work for the FAA and own a small airplane, I am aware of the need to protect what general aviation airports remain in this country. Because of the continuing lose of general aviation airports to development and the subtle danger of continuing encroachment on the remaining airports, I asked Braswell what was his secret for having his airport considered in the Douglas County planning process.

He said Minden has its own challenges. In 1984, a local ordinance was passed by the voters that restricted certain activities at the airport. He said, "No aircraft weighing more than 30,000 pounds with main landing gear with single wheels (50,000 pounds for aircraft with main gear with multiple wheels) could land at the airport. The only exception to this landing weight limitation is that large firefighting aircraft and military aircraft can use the field as needed." He said another airport restriction was that the longest runway cannot be lengthened or widened. The airport must also be self-supporting. No general funds can be used to support the airport. Apparently, local voters were concerned about the noise larger aircraft could generate in 1984 when the airport restrictions were passed.

Braswell said these restrictions pose an interesting problem for the airport and county. The airport receives Federal funding through the FAA's airport improvement process. According to him, the airport has received about $17 million in Federal funding over the past 20 years. The challenge is the FAA funding requires fair and equitable airport usage. The local ordinance prevents the fair use of the airport. He said an example of the impact of this local restriction is that one of the airport's corporate customers has a large processing plant in Minden, but the company cannot legally land its Gulfstream V into the airport even though the aircraft meets or exceeds current noise standards because of the technological advances in aircraft and engine design since 1984.

This is an issue that the local community must resolve. But, based upon the FAA's most recent airport assessment, the FAA wants the airport weight limitation increased to 72,000 to 75, 000 pounds. Time will tell what happens. According to the airport's Internet Web site, the County has delayed plans for a voter referendum on the restrictions until at least 2008.

In spite of the local restrictions, the Minden-Tahoe airport continues to grow and flourish. Braswell said last year the airport was able to pay off the construction cost of building 54 T-



Minden-Tahoe Airport Manager Jim Braswell, C.A.E.

hangars at the airport. Then the airport built 24 new T-hangars and paid cash for them. "Hangar rent provides the airport $300,000 per year," he said.

In discussing his airport, Braswell said the airport has a very active community program. "Support from the public is very good," he said. He showed me a map of the airport that shows the zoning around the field. In pointing out nearby properties, he said, "I consider those property owners around the airport as neighbors." He said although the largest single property owner around the airport uses the land for agricultural purposes, the airport takes a serious interest in the surrounding land. In the past four years, he said the airport has bought 120 acres of land around the airport using Federal funding.

He said the desire to protect the airport goes back years.

According to Braswell, the county airport has always been in the forefront of the community. The airport was initially built during WWII as a military airfield. Then years later, he said, the old Airport Land Use Committee may have saved the airport by requiring that any development on the airport must contain at least a 75 percent aviation related activity or usage. The Committee is gone now, but current practice requires a special permit for airport development. As he said, "The question is should we allow valuable airport land go for non-aviation use."

He compared an airport to a golf course. Both are alike, he said, both provide much needed open space and both provide revenue.

When asked how the community supports the airport, he told of the involvement of many people in the area. From the county commissioners to the local businesses to students to senior citizens, the airport works hard to provide something for everyone. One of the keys to the airport's success is it commitment to keep everyone in the community informed about the airport's programs and needs. From its local newsletter to its Web site to its many working groups and committees, the airport works hard to be a good neighbor.

An example of that community involvement in past years was a three-day public event called the Wings of Change. From a teen dance to static and aircraft displays to venders, the Wings of Change allowed people in the community to come out to their airport to learn about the airport as well has having fun. In addition to the annual airport public events, the airport conducts tours for various civic and business groups as well as local school tours. Airport facilities are also available for non-aviation groups. When asked how the airport reaches out to the youth of the community, Braswell said there is a very active Civil Air Patrol unit on the airport.

An important part of the airport's community involvement is its Douglas County Airport Advisory Committee. By county statute, the seven-member Committee must include a representative from the airport's commercial community, soaring community, and the powered aircraft community. Two members must be from the business community and two from the community at large. As noted in the Ordinance, the Committee members are appointed by the Board of County Commissioners with the duty to "...provide recommendations to the county commissioners on the general subject of aviation issues related to the airport." The Ordinance further states, "The committee shall advance and promote the interests of aviation and protect the general welfare of the people living and working at or near the airport, and in the county."

As noted, the Airport Advisory Committee plays an important role in representing the various interests of those directly involved in the airport as well as those of people living near the airport and in the community at large.

As Braswell said in concluding his comments, "Years ago, the question was 'When will I get to the airport.' Now, it is 'Where is the airport—all I see is houses.'" Airports must be willing to adapt to changes in the community, as well as to changes in aviation. He said as new people move into the Minden area, they bring their desires to change things to match their previous experiences. This desire for change must be addressed in meeting the community's commitment to the airport and its vital transportation and recreational role in the community.

I think in reviewing my notes from his interview, Braswell and the Minden-Tahoe Airport have a good future based upon the active support of the airport by its surrounding neighbors. As he said, "It is important to keep the community informed." It appears the airport is doing just that. In closing, Minden-Tahoe Airport is an example of how one airport and its community are working together for their own future. Some of the programs outlined here may serve as examples for use by other airports that may be struggling to survive the onslaught of their local community's need for more land.

Tales from an FAA Inspector

by Al Peyus

A Safety Task Often Overlooked

A brand new airplane! The new Gulfstream G150! It may be called "green," but it is still brand spanking new. It was so new that it had not been issued a Federal Aviation Administration (FAA) Type nomenclature. The new "type" nomenclature is entered into the FAA data base as the "official" shorthand for that aircraft. This shorthand is then used for this aircraft certification listing on pilots' certificate. And I got to be among the first pilots to be trained and typed in it! Would you believe I get paid to do this work?! So why does the FAA get involved in new aircraft before they are certificated?

Safety! The FAA makes sure all new aircraft and their component parts meet or exceed a long list of safety guidelines. In order to ensure those safety issues are met, the FAA uses a Flight Standardization Board (FSB). An FSB is a designated group of operations inspectors who determine type rating, certification, and training requirements for new or modified aircraft. During this Board, or review, the aircraft, training material, procedures, manuals, checklists, and profiles are all gone through with a "fine tooth comb" (the participants' eyes, ears, experience, and knowledge). They are reviewed, trained on, and tested. All must meet the standards set by the FAA, International Civil Aviation Organization (ICAO), Joint Aviation Administration (JAA), and European Aviation Safety Agency (EASA).

The international market is always invited. When the international organizations join the FSB, their side of the operation is called the Flight Operations Evaluation Board (FOEB). An FOEB is a council of technically qualified specialists responsible for Master Minimum Equipment List (MMEL) matters related to a type of aircraft. Both operations run concurrently with one or more representatives from the ICAO, the JAA, and/or EASA joining the FSB team.

The FAA coordinates the FSBs through its Aircraft Evaluation Group (AEG). AEGs are established in specific Flight Standards Divisions for regions that have aircraft certification responsibility. With such wide and diverse aviation and component manufacturers in today's market, the FAA has various AEG offices to cover all aspects of new aviation products. Below is the AEG office breakdown of responsibilities and location in no particular order.

1. The AEG office in Boston, Massachusetts, deals with engines, auxiliary power units (APUs), and propellers.

2. The Fort Worth, Texas, office deals solely with rotorcraft; both reciprocating and turbine engines.

3. The Kansas City, Missouri, office handles small aircraft and balloons.

4. The Long Beach, California, and the Seattle, Washington, offices handle all the commercial transportation aircraft used by the world's scheduled air carriers and all of the transport category business jets.

Major areas of concern for the AEG when dealing with new aviation equipment are:

a. Chairing all FSB and type rating determination reviews
b. Developing and approving Master Minimum Equipment Lists (MMEL)
c. Reviewing/addressing areas of question in all aircraft/rotorcraft flight manuals
d. Examining/testing cockpit design for proper function and use
e. Testing function and reliability and report on:
    1. Operational acceptability
    2. Function and reliability
    3. Training simulators
    4. Emergency evacuation demonstrations
    5. Forward observer seat
    6. Instructions for continued airworthiness
f. Representing Flight Standards Service concerns
g. Coordinating with the Flight Standards Airworthiness organization within the Seattle AEG
h. Coordinating with the Transport Airplane Directorate in Renton, Washington
i. Aircraft Certification offices and the Directorate
j. Coordinating with the Flight Standards District Offices

Attending the first day of ground school are, from left, Steve Ford, Mark Humphreys, Jaap Meijer, and the article's author Al Peyus.

(FSDO), manufacturers, and foreign aviation authorities

The People Involved

It was with the Long Beach office that I had the opportunity to once again be part of a new aircraft certification. This was the second time I have worked with the chair, Mark Humphreys. Mark has been with the FAA and the Long Beach AEG long enough to have chaired FSB evaluations for at least 10 new aircraft.

Joining Mark was a "trainee" (new only to the AEG side of the FAA) Steve Ford. Steve attended this FSB to complete his "On-the-Job-training," which will allow him to chair his own FSB in August of this year on another new aircraft design. Co-chairing for JAA and EASA was Jaap Meijer of the Netherlands. Jaap had retired from the Dutch Aviation Authority six months prior to this assignment. His reputation as a safe, knowledgeable, and experienced Captain was the logic behind his being asked by the JAA to chair the JOEB.

The concept of having two "chairs" for the project assures the aircraft comes through the FSB/JOEB with both an FAA type certificate and JAA/EASA operational approval. All safety issues are covered for both the FAA and the international authorities. Through international cooperation, the new aircraft is certificated for use world-wide at the same time.

The Commercial and General Aviation Division of Flight Standards, AFS-800, deals with all things in general aviation, as well as "on-demand" Title 14 Code of Federal Regulations part 135 and part 125 operations. When a new aircraft design comes along that is intended to be operated in one or both of these categories, AFS-800 sends an inspector to the FSB review to assure safety and training standards are maintained. If the intended aircraft is a transport category that is to be operated in the scheduled commercial airlines market, the Air Transportation Division, AFS-200, would send a representative.

The Task

A massive amount of energy, expertise, and safety considerations is put into a new aircraft design long before the public has the opportunity to use the product. To give you an idea of what is involved, let me take you through the process just completed on a new proposed aircraft. After seeing what happens, how it works, and the effort everyone puts into the process, I hope you will see that making sure you have a safe and reliable product goes well and beyond simply learning to fly a new aircraft.

As early as three years before the first day of ground school, the AEG is involved with flight testing, procedures, and checklists. This FSB was unique. The aircraft was manufactured outside the United States and certificated by another country before the FSB started. Normally, the AEG is involved before certification. In this case, the AEG sent Mark Humphreys to that country. He worked with the manufacturer coordinating with the in-country Civil Aviation Administration (CAA) while preparing the aircraft for the final FAA FSB process.

When the aircraft was nearly ready for the FSB/JOEB evaluation, the manufacturer sent all the flight limitations, procedures, checklists, and manuals for review and acceptance by the FAA through the Seattle, Washington, Transport Aircraft Directorate.

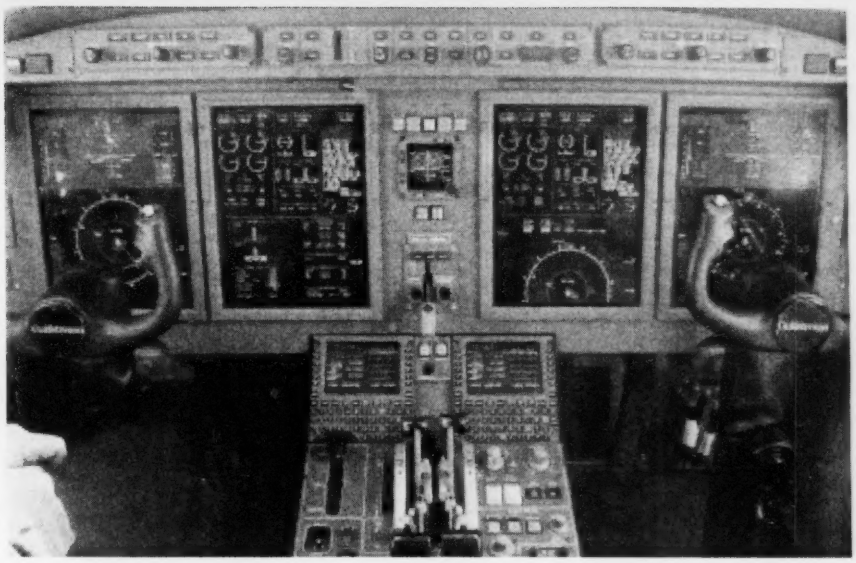
The Team and the Class Preparation

If it is a new small corporate type aircraft to be flown by the owner operator, an inspector who has little turbine experience is requested. If the aircraft is a "cabin class" aircraft, two different inspectors are requested: one with "cabin class" experience and one without, but both with turbine types on their certificate. Each size and type of aircraft has its own training and flying concerns for a pilot. These concerns must be addressed during training with the same caliber of expected pilot expertise.

Before training can start, all training materials must be prepared for the class. A class may have four to eight FSB/JOEB members, pilots from the manufacturer, and selected pilots/instructors from the training institution. Additional class members may include "technical publication" representatives from both the manufacturer and the training institution to make "on-the-

spot" corrections to publications as the class is proceeding.

In our training program there were three FAA inspectors, one JAA/EASA representative, the manufacturer's chief test pilot, three company test pilots, one manufacturer and one teaching institution technical publication expert, three additional institutional instructors who were going to teach later classes, the training course manager, and various VIP's from the teaching institution and additional instructors who came to observe sporadically throughout the course. It was truly a full house!



The Classroom

As we entered the class room we saw that it was set for us. There were a large number of books, manuals, checklists, note paper, pens, pencils, and local directions for food stacked neatly at each seat. A truly overwhelming first sight! It seemed as though there were sufficient books and references to keep us busy for several months!

We had several manuals: the aircraft (volumes one and two), avionics (one main manual and one abbreviated "quick check" trouble shooting manual), an emergency and abnormal procedures checklist, a normal procedures checklist, and the Pilot Training Manual (volumes one and two), assorted writing implements and note paper, and a CD with all the manuals recorded for our use outside the classroom.

The best addition to this classroom was the individual computer setups at each seat. Each seat was arranged with two computer screens designed and programmed for interactive use while we were working with the new navigation and communication system. Each seat even had a working Flight Management System (FMS) tied into the program! This allowed us to "fly" the aircraft while interacting with the Nav/Com system. Through the computer we could accomplish every thing that was possible in the aircraft. The computer program and screens were a very nice technical set-up that made training and learning more enjoyable, faster, and longer lasting.

For each member of the FSB/JOEB, there are three concerns that only occur during FSB reviews. Because of this, we, the inspectors, must wear three different "hats" as we go through this program.

The first "hat" is the expected and obvious one; we are the students. We must learn a new aircraft and prepare for a written, oral, and flight exam at the end of the program. Study we must!

The second is that of the evaluator. This duty requires us to maintain the "official government on-sight evaluator." As we look at the material, we must maintain the eye of the government evaluator. As such, we look at the data and ask, "Does it make sense, follow an accepted format, maintain a natural flow, and can the average future pilot be guaranteed to receive adequate and safe training?"

The expected level of pilot who would be entering this aircraft must also be considered. In some cases, the pilot may be up-grading to his/her first turbine type or cabin class aircraft. Does the training and materials meet the needs of a new entry pilot? Does it provide succinct information? Is the data sufficiently basic and yet technically advanced for both the new upgrade and the seasoned pilot?

We evaluate the manuals and procedures to make sure they conform to safety and proper use. The procedures must always flow smoothly while conforming to a system understanding that has a historical standard of acceptance. The FAA has established a means and manner that is acceptable as Standard Operating Procedures (SOP) in teaching systems and aircraft operation. It is against these accepted standards that the offered program is being tested and reviewed.

The third hat is that of future examiner. After completing our own training and checking, we will be conducting pilot type rating check rides on the manufacturer and training organization pilots and check airmen.

Flight Training

What about the flight training? Here we go into an aircraft that only the manufacturer, FAA, and CAA test pilots have flown. It is sleek and beautiful with clean lines and a look that says it is going .85 Mach while still in the chocks! Over the door, painted in large capitalized blue lettering against a white background is the word "EXPERIMENTAL".

Inside is the "green" aircraft I mentioned earlier. So, what is a "green aircraft?" Picture a bright new aircraft sitting on the ramp. It has a shiny new white paint job with energy stripes running down the length of the plane with an upward swoop toward the tail in two colors. Except for those big blue letters over the entrance door, there was no indication of what

awaited me in side. I could not wait to see inside, especially the cockpit!

As I stepped inside, I noticed several interior differences from the "normal" line aircraft. Keep in mind this aircraft was designed to carry very comfortably six to eight passengers. It was a minor shock to find there were only four seats inside. There were only two pilot seats and two "observer" seats. The two observer seats were for the instructor and second trainee pilot. The next indication of a "green" aircraft was the interior, or lack of it. There was no paneling or proper flooring. What was visible all around the interior were the insulation, wires, hydraulic lines, and a few cables. On the floor was a pathway to walk down the center while outside the pathway the under structure was visible.

The interior contained several items secured to the floor. Communication and navigation boxes were placed toward the aft area while safety equipment was placed more forward for accessibility. The manufacturer had placed several cases of water on board for us and we had a place to store the box lunches that were provided. Personally speaking, with flights of three to four-hour duration, the most important item in the aircraft, especially for the non-flying pilot and instructor was a large black garbage can. This was a 35 gallon garbage can outfitted to serve as portable flying toilet. It was secured on the starboard side near the aft bulkhead. Talk about convenience!

The cockpit faired little better. The only leather in the cockpit covered the seats. The rest was bare metal painted a delightfully comfortable lemon-yellow. What was not covered in instrumentation, gauges, dials, switches, and circuit breakers was covered only in insulation. Although it was a little bare, the four 12-inches by 16-inches flat panels making up the Electronic Flight Instrument System (EFIS) did take my mind off the bare cockpit and became my center of attention!

Missing from this cockpit at the time of the training were the Flight Data Recorder, Cockpit Voice Recorder, "No Smoking/Seat Belt" switches (with no interior in the cabin, there was no place for signs!), and electronic charts (the "Electronic Flight Bag," an option for the future buyer) on the Nav/Com system. This was truly a bare bones aircraft interior. The term "green" aircraft comes from the normal green base paint placed on all aircraft before the final paint scheme is applied. The "green" paint provides a base coat and corrosion protection.

During the flight training, the student pilot not flying reviewed the manuals and checklists. We validated the labels on all the switches, gauges, dials, and placards. The checklist items were matched to the actual switches and locations to confirm that the flow offered in the ground training matched that of the aircraft during flight training. Also, did the checklists actually do what they are intended to do?

After the check rides are completed for the inspectors, the training did not stop. There were three additional flights called operational suitability flights. These flights took the aircraft on what was anticipated to be "normal" use flights; two short and one long. The aircraft was taken into expected mission airports with typical loads. This was to ensure the aircraft could do all that was advertised and anticipated of it.

Checkrides were first given to the FSB/JOEB members (of course, Mark Humphreys was the first to get the type rating!) then to the test pilots and the teaching institution pilots. Everyone received the same check ride. Each ride started with an oral examination starting with a weight and balance problem and continued to the aircraft, its systems, limitations, abnormal and emergency procedures, and Nav/Com system use. A normal oral is covered in about two hours. The oral was followed by an aircraft flight. The items covered during the flight are taken from the Practical Test Standards for the Airline Transport Pilot (ATP) Type rating add-on. Every tested pilot is held to the same ATP Practical Test Standards. The flight process takes an average of two hours and 15 minutes.

This is a new aircraft with new training materials and aids, checklists, and manuals. With new material, errors are not unusual. When discovered, these are called "findings." A finding is defined as an error, misrepresentation, inaccurate SOP, an area in need of review/correction as identified by one of the team members, or a typo.

Throughout the entire process of classroom and aircraft training and flights, the four "trainees" wrote each "finding" onto a provided AEG hard copy form. Each form was reviewed by the team. If all were in agreement with the finding, it was posted onto an AEG electronic form and became a permanent part of the AEG FSB report. If there was a disagreement within the team, it was discussed until a process, procedure, or correction was agreed upon before the finding was posted.

This electronic AEG form was then transmitted to the manufacturer's point of contact who shared portions of the list with the teaching institution. The response offered by either the manufacturer or the teaching institution for most items was in concurrence with the FSB team finding and suggested corrective action. Other items required the manufacturer or teaching institution to offer corrections, and, if acceptable and safe, were agreed to by the team.

On a few findings, there were disagreements. The manufacturer offered its reasoning to keep what was offered and provided the logic for its decision. The FSB team first discussed the explanation, description, or checklist flow and attempted to use the manufacturer's method or description again. If, in the team's collective mind, there was still a problem, that information was related back to the manufacturer with as much explanation and detail as possible. This process continued on a weekly, if not daily process.

Some findings can bounce back and forth with suggested changes as many as four to five times before con-

cordance is reached. Before a final report can be completed, all the findings must be met with approval and acceptance from both sides of the regulatory and manufacturer teams.

The editing issues of typos, incorrect labeling, or inappropriate verbiage is normally corrected on the spot through one or both of the technical publications experts attending the class.

The FSB process ends with a report to the FAA Administrator that indicates the aircraft is to be certificated under the FAA guidelines and listed as a new pilot type rating along with the proposed proper nomenclature.

This adventure involved about two months of effort just for the ground and flight training. The result was an aircraft with a new type rating. (Remember, it had already been certificated by its country of origin!) It had been found to be flyable, meeting all safety issues and concerns, had a proven training program suitable for general aviation and corporate use, and had been found suitable for flight in the manner and means the manufacturer intended.

All this time, effort, and expertise expended, provides the public with a new aircraft and its associated training program that meets the standard of safety established to protect the public, the intended passengers, and the aircraft operator.

I appreciated the opportunity to be part of a new aircraft FSB and to work with our professional counterparts in the AEG. It is all for you, the end user, that the efforts are made by the AEG, company test pilots, teaching institutions, JAA/EAS, ICAO, and the FAA's AFS-800 and AFS-200 divisions. It is our assigned task, duty, and desire to provide you the safest and best product possible. We must confirm that the new pilots and users can be trained and feel confident flying and transporting you—the passengers.

Al Peyus is an Aviation Safety Inspector in Flight Standards' General Aviation and Commercial Division.

MEDICAL Stuff

Seasonal Allergies or Sinus Infection?

Aviators Who Spend Significant Time in the Air Should Keep Allergies Under Control

by Christopher Blair, DO, MBA

Ah, spring. Ah-Chew! that is. As one of my pharmaceutical reps once told me, spring can be summed up in one catchy phrase, "'Tis the season to be sneezing." Such is springtime in Texas.

Spring brings wonderful, warmer weather. And along with the seasonal changes, all manner of allergens take flight. Pets shed their winter coats. Trees and flowers pollinate. Dust and particulate matter from winter air ducts and air filters long overdue for a change add to the problems. Sneezing, itchy eyes, and sore throats drive patients into medical offices in spring droves.

An upper respiratory infection can present with symptoms similar to those of allergies, but infection can often be suspected if additional symptoms such as body aches, fatigue, or fever are present. Antibiotics can be helpful to treat an infection, but won't help in the case of allergies. Still, untreated allergies may result in the eventual need for antibiotics. Much like a swimming pool that goes uncleaned, the congestion and stagnation that go along with allergies can actually be a fertile breeding ground for infection.

In the flying public, this can be an especially problematic phenomenon. Due in large part to the pressure changes of ascent and descent, bacteria that might otherwise be harmless can be forced into swollen sinus passages or ear canals and there trapped, becoming seeds for a nasty infection. Therefore, any person complaining of ear pain, sinus pressure, or an inability to equalize during or after a flight should be seen by a physician trained in the special needs of flying professionals before taking off again.

Pilots, flight attendants, and any other professional who spends significant time in the air should be particularly vigilant to keep allergies at bay— and quick to visit a qualified aeromedical doctor to get allergies under control. Early detection and treatment can help to avoid possible infection, eardrum rupture, or even more serious problems.

Dr. Blair is an FAA aviation medical examiner and the medical director for MedComm Neighborhood Medical Care, Coppell, Texas.

CFI/Flight Instructor—Is There A Difference? Which Are You? Which Do You Need?

by Jim Trusty ©2004

Yes to question number one—there is a difference—and make your own decision to numbers two and three. First let me begin by saying that a certificated flight instructor (CFI) is a certificate that is issued by the FAA and a Flight Instructor is a teacher who loves what they do and works regularly at it.

That little distinction between the two is ever-widening as we lose more and more of the basic student base. The airplanes are getting smarter, faster, and certainly more complex, and our avionics packages are on the way to providing pilotless flying privileges to the masses, which makes the demands placed on the average instructor never-ending.

What you must decide before you make a decision for one or the other is simply, "What are my needs?" Remember that we have FAA certifications for eight types of flight instructors and three types of ground instructors. Your needs may be from basic instruction for your initial pilot certificate to recurrency/transition training in your chosen new aircraft and everything in between, including Knowledge Test preparation and ground training. My personal view of all the different things that a flight instructor can actually do and do well should be limited by them personally. For me, it is simply too time consuming to stay current and proficient in every niche.

I personally love teaching instrument flight, doing recurrency/transition training in a limited number of aircraft, and Flight Reviews for just about anyone. Don't let cost chase you away from someone who is qualified to meet your needs, although it has to be a consideration. Flight instruction is a business and is probably this person's only source of income.

A demonstration by the instructor of what you need is more valuable than all the words that can be spoken. My thought has always been that you can make your mouth say anything and still not be skilled enough to prove it in the air. A full layout of time, energy, money, schedule, routines, and what is expected of each person involved can easily be worked out before any agreement is reached—and should be.

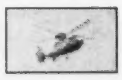
Not too many years ago, once you got your CFI ticket, you were a CFI from that time on, simply because nothing ever changed in this chosen field of aviation. The same basic student, the same few airports real close by, the same trainer aircraft to fly before and after you became a pilot, the same paperwork, and the same checkrides. Everything was the same. The changes started to accumulate in the mid 80's with the advent and use of a makeshift syllabus called the Practical Test Standards (PTS) for each and every certificate and rating offered by the FAA. This was a major step forward in training and examination that was slowly accepted by most involved in aviation.

It finally came to pass that newly licensed instructors were teaching one way and the old timers were doing things the old way. The same could be said of Designated Pilot Examiners (DPE) and FAA Inspectors on their respective checkrides. The next big change was the slow introduction of advanced avionics to assist us in finding airports we had absolutely no trouble finding before with Non-Directional Beacons (NDB) or Very High Frequency Omni-Directional Range (VOR) or simply Pilotage and Dead Reckoning.

Finally we have been introduced to some new designs in airplanes that really require more skill, quicker reactions, different techniques, and a whole new set of numbers and speeds. We then got Global Positioning System (GPS) and all of a sudden we were light years behind the panel knowledge curve.

If you are an instructor, are you keeping up with all these changes? Do you really have to? Let's look at some statistics of my own. Most of my students now own their own airplane, have the most sophisticated electronics in the marketplace, have an Instrument ticket, and they actually expect me to know everything about anything that has taken place over the past few years so that I can answer their questions and pass on that information to them. In the last 12 months, I have flown with 41 people in 25 different airplanes and I had to ask myself, was I up on everything? NOPE! But I knew where to find it . . . and quickly, too.

As flight instructors of this century, we were quickly becoming much, much more than safety pilots or riders in the sky. Then 9/11 took place and flying suddenly became a lot harder for everyone. Temporary Flight Restrictions (TFR) are everywhere, can't fly in this zone, no-fly areas, don't fly over or near this and that. Insurance has gone sky high and student starts have hit rock bottom. With the airline furloughs, we suddenly have a few more instructors to help us cope with



fewer students.

What to do? Some options include an old buddy of mine at a nearby airport who only takes student pilots, in a Cessna 152, and keeps them in the patch forever. He makes $15 an hour and is happy. Some have accepted all these changes and developed a niche like me and they try to do one thing, do it well, and stay up to date with whatever is required.

What about you? Anyone that flies needs an instructor on occasion—recurrency, flight reviews, instrument proficiency checks, night flying checkouts, or you fill in the blank with a need of your own. As an instructor, what you are going to do as a professional in aviation is entirely up to you. What and how much is your choice. Select, study, advertise, and DO IT! We know what is going to be asked of us as teachers. We have the time to prepare, we have to desire to perform and we have those skills, so let's teach!

If you have a need for the services of an instructor, the onus is on you to be selective. No one knows more than you exactly what you need from an instructor. Ask, look, question, demonstrate, and then select on performance.

If I can answer any questions for you, either instructors or those needing a teacher, feel free to contact me and I'll listen and try to help. I've been here for a long time and survived, and for the most part my clients are all happy. This merger can work with just a little conversation from both parties. Expect to make a mistake on occasion and when it happens, fix it, repair it, or drop it and move on. This isn't brain surgery—it's just two people riding around in an airplane.

***** ACCIDENTS ARE CAUSED AND THEREFORE PREVENTABLE *****

Jim Trusty was the FAA/Aviation Industry National Flight Instructor of the Year (1997) and the first-ever FAA Southern Region Aviation Safety Counselor of the Year (1995). He still works full-time as a Corporate Pilot/Flight and Ground Instructor/FAA Aviation Safety Counselor/Published Aviation Magazine Writer. You have been reading his work since 1973 in over 100 publications worldwide. He welcomes your comments and e-mail works best <Lrn2Fly@bellsouth.net>.

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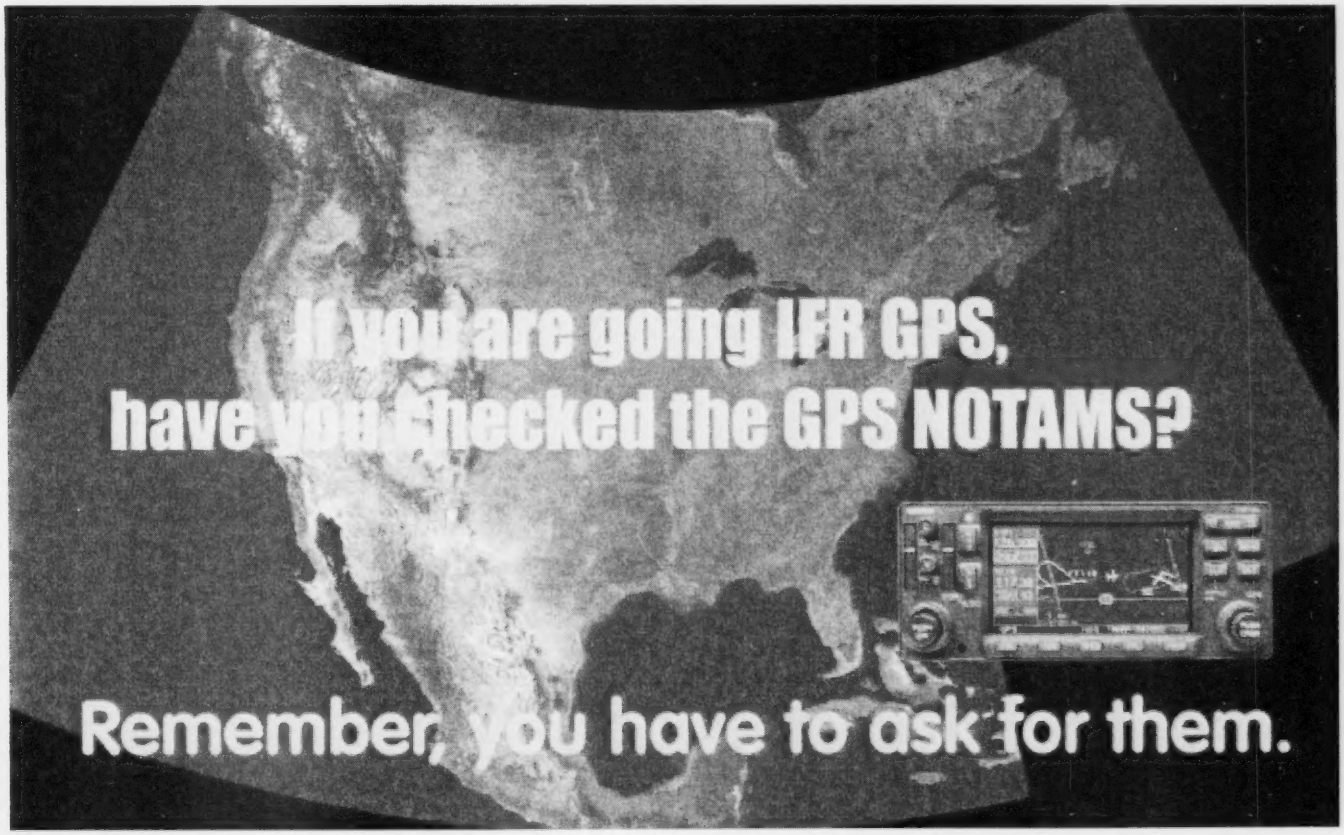


Aviation Maintenance Alerts

Cessna: 172S; Worn Aileron Control Cable; ATA 2710

During a 100-hour inspection, a mechanic found a "flat spot" on the L/H aileron crossover cable. The defect occurred at the aileron cable abrasion strip attached to the rib assembly at wing station 71.19. Further investigation found the cable beginning to fray. This defect's cause is determined to be from wearing on the abrasion strip. "To solve this problem, I think the abrasion strip should be lowered or a pulley installed." (The abrasion strip P/N is 0523233-3. The stainless steel control cable P/N is 0510105-364.) Part Total Time: 2,065.8 hours.

Cessna: 172S; Worn Aileron Control Cable; ATA 2710

Storm damage prompted the mechanic in the previous discrepancy to inspect this aircraft: again a "flat spot" was found on the aileron crossover cable. As above, the wear position corresponds to the abrasion strip attached to a rib assembly at wing station 71.19. This cable was also beginning to fray. His recommendation is the same: lower the strip or install another pulley. (The abrasion strip P/N is 0523233-3. The stainless steel control cable P/N is 0510105-364.) Part Total Time: 1,445.8 hours

Cessna: 402C; Worn Aileron Control Cable; ATA 2710

The submitting mechanic writes, "Wear from blending (on this cable) is due to softer material used in these new style cables (corrosion resistant)." The blending was found at "...the wing pulley": no further location description was provided. (The aileron cable P/N is listed as 5000008-95CR. Premature wear and/or short life on these stainless cables is an increasingly frequent defect—Ed.) Part Total Time: (unknown).

Cessna: 402C; Worn Aileron Control Cable; ATA 2710

"Cable is blended at pulley," states the mechanic. "The probable cause is the softer, new style stainless steel cable material. The service life is only a fraction of the old style steel cables." The blending defect was found on the forward cable (P/N 5000008-95CR) of the L/H wing at the middle pulley. Part Total Time: (unknown).

Piper: PA28-181; Worn Aileron Cables; ATA 2710

The technician states, "The left and right primary aileron cables are severely worn at the wing pulleys (P/N 41001-010) located at wing station 49.25. These cables have approximately 4,725.4 hours total time. This defect is not a result of binding pulleys, but most probably due to sub-standard cable used during manufacture, especially the stainless steel cable. Although service bulletin 1048 is accomplished at each 100 hour and annual inspection, it by no means solves this problem. It is recommended that all stainless steel cables be eliminated and galvanized steel cables be installed." (The aileron cable P/N is 62701-099. The SDRS data base reflects an additional 21 worn/frayed cable related entries.) Part Total Time: 4,725.4 hours.

Raytheon (Beech): 200; Shattered Windshield; ATA 5610

The submitter describes the aircraft at cruise with the windshield heat on when the inner layer shattered. Altitude at the time of occurrence was 22,000 feet, clear weather, and -35 degrees Celsius. (The windshield P/N given: 101-384025-18. The SDRS data base records 18 shattered windshield entries, two of which are the exact same part numbers.) Part Total Time: 4,636.1 hours.

Bell: 206B; Damaged Main Rotor Blade; ATA 6210

The submitter states, "A ground crew cloth-safari hat blew off in high winds in the Everglades and went through the main rotor. No vibrations or apparent damage was felt in the aircraft—(the flight was...) smooth returning to the airport. (Postflight inspection...) found dents top and bottom at stations 141 to 145, inboard of the outboard trim tabs." "...the blade was removed

and sent to Rotor Blades, Inc. for (repair) evaluation. Factory engineering condemned the blade—the top dent was too deep for repair." (The main rotor blade P/N is 206-010-200-133. The SDRS data base records 47 blade damage reports.) Part Total Time: 831.0 hours.

Schweizer: 269C-1; Door Hinge Pin Failure; ATA 5210

(The following combines two identical submissions from the same writer, describing the same defect on two different aircraft.) This mechanic writes, "The door pin portion of the hinge, which is responsible for retaining the door, failed. This leaves the door connected at only one point and an in-flight failure could potentially allow the door to separate from the aircraft." (Door hinge P/N is: 269A4755-11. No suggestion for elimination of this defect was offered.) Part Total Time: 292.0 and 367.6 hours (respectively).

Schweizer: 269C-1; Door Hinge Pin Failure; ATA 5210

The writer of the previous defect report submits a third door pin discrepancy. "The door pin portion of the hinge, which is responsible for retaining the door, broke in flight, and the door was unsecured at the lower connecting point. The flight crew landed (...the helicopter), the door was secured temporarily, and the aircraft then returned to the maintenance facility." (The door hinge P/N given as 269A4755-11.) Part Total Time: 304.1 hours.

Continental: IO-470-L; Failed Rocker Arm; ATA 8530

"On take-off roll the pilot lost power to the left engine," wrote this repair station technician. "Investigation revealed the number five cylinder exhaust valve rocker arm was broken. Additional inspection revealed damage to the number five push rod, housing, and hydraulic lifter assembly. The engine was manufactured on 7/23/01 and has a total time 110.6 hours. Inspection and repair was completed in accordance with instructions from a TCM tech representative. The broken rocker arm was sent to TCM for warranty, per their request and the owner's approval." (Part number for the rocker arm given as 652130.)

AIR NOTES
ELECTRONIC VERSION OF FAA FORM 8010-4, MALFUNCTION OR DEFECT REPORT

One of the recent improvements to the Flight Standards Service Aviation Information Internet Web site is the inclusion of FAA Form 8010-4, Malfunction or Defect Report. This Web site is still under construction and further changes will be made; however, the site is now active, usable, and contains a great deal of information.

Various electronic versions of this form have been used in the past; however, this new electronic version is more user friendly and replaces all other versions. You can complete the form online and submit the information electronically. The form is used for all aircraft except certificated air carriers who are provided a different electronic form. The Internet address is: <http://av-info.faa.gov/isdr>.

When the page opens, select "M or D Submission Form" and, when complete, use the "Add Service Difficulty Report" button at the top left to send the form. Many of you have inquired about this service. It is now available, and we encourage everyone to use this format when submitting aviation, service-related information.

The Aviation Maintenance Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those who operate and maintain civil aeronautical products and can be found on the Web at <http://www.faa.gov/avr/afs>. Click on "Maintenance Alerts" under Regulations and Guidance. The monthly contents include items that have been reported as significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts' readers prompt notice of conditions reported via Malfunction or Defect Reports, Service Difficulty Reports, and Maintenance Difficulty Reports. Your comments and suggestions for improvement are always welcome. Send to: FAA; ATTN: Aviation Data Systems Branch (AFS-620); P.O. Box 25082; Oklahoma City, OK 73125-5029.

• Proposed change to AC 90-42F

Thank you for giving us the Flight Forum in the *FAA Aviation News* magazine.

As an active flight instructor I would like to see the phase "Departing Runway ____ " changed to "Taking off Runway" in Section 10. (2) in Advisory Circular 90-42, Traffic Advisory Practices at Airports without Operating Control Towers. The reason for this change is that departing a runway can easily be confused. Are we:

- Taking off
- Departing the runway on the taxi way
- On the departure leg
- Departing the pattern.

Confusing, especially if you are stepped on or the radio traffic is too heavy and/or you are at a new and strange airport. I believe that at a Non-towered field the phraseology should mimic the FAA standards as set forth in *Aeronautical Information Manual* or the federal aviation regulations.

I have personally seen and heard pilots so confused where they were that safety issue were prevalent and compromised. Pilots maneuvering at low altitudes, trying to catch sight of aircraft that the pilot has given confusing position report continue to claim lives.

AOPA reminds us again in the CD "Maneuvering" how dangerous low and slow can be for pilots trying to set up for the landing. Location of aircraft and understanding a reported position is so critical in aviation safety, especially at a non-towered field. The skies are becoming busier now that Sport Piloting is being introduced. We all must be on the same page.

Tom Evans, Master CFI
Via Internet

Thank you for your comments. We will forward a copy of your comments to the appropriate Air Traffic organization for consideration.

• FITS Photo

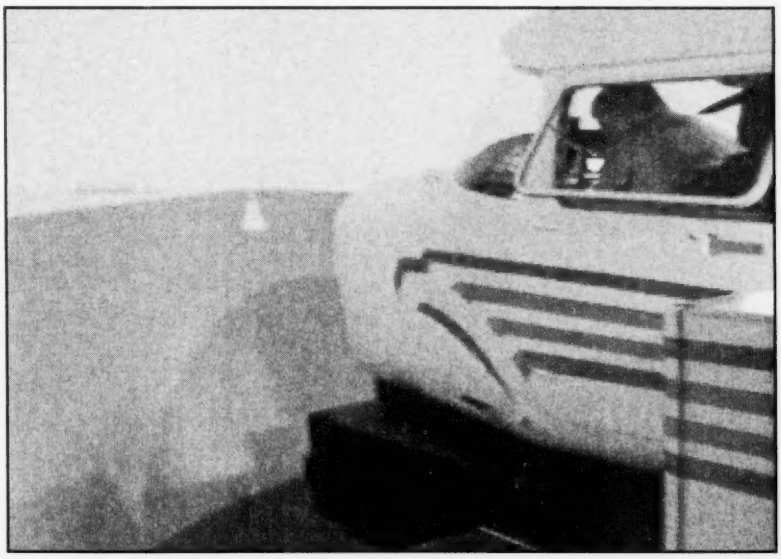
I just read the FITS article in the March/April issue of *FAA Aviation News*. As a guy who flies glass cockpit airplanes, but grew up in general aviation, I'm very interested in how these two worlds will merge. Years ago we did a lot of work with the early TSO-C-129 GPS receivers (*Aviation News* even did an article); I had no idea that that was just the beginning...but I digress.

In your FITS article, you have an Embry-Riddle photo of a Cessna cockpit. At close inspection, this aircraft (or very high fidelity simulator, complete with CO detector?) has its engine running without a pilot at the controls. I'm sure the pilot slid his seat back just enough to be out of the photo. Or, perhaps the tail is tied down and the wheels chocked. Either way it just doesn't look right to me—especially in an aviation safety magazine. Maybe I'm the only one who noticed.

Fred Karl
Via Internet

The Embry-Riddle photograph you saw in the FITS article was taken in one of the ERAU Cessna training devices. The photo on this page shows the exterior of the training device.

Thanks for your interest in the magazine and ramp safety.



FAA AVIATION NEWS welcomes comments. We may edit letters for style and/or length. If we have more than one letter on the same topic, we will select one representative letter to publish. Because of our publishing schedules, responses may not appear for several issues. We do not print anonymous letters, but we do withhold names or send personal replies upon request. Readers are reminded that questions dealing with immediate FAA operational issues should be referred to their local Flight Standards District Office or Air Traffic facility. Send letters to H. Dean Chamberlain, Editor, FAA AVIATION NEWS, AFS-805, 800 Independence Ave., SW, Washington, DC 20591, or FAX them to (202) 267-9463; e-mail address:

Dean.Chamberlain@faa.gov

FAA'S O'BRIEN RECEIVES PAMA/FSF JOE CHASE AWARD

Pictured at the award ceremony, from left, PAMA's Chairman of the Board of Directors David Orcutt, Mrs. Marie O'Brien with William O'Brien, and FSF's President and CEO Sir Stuart Matthews. (photo courtesy of PAMA)

The Professional Aviation Maintenance Association's (PAMA) /Flight Safety Foundation (FSF) Joe Chase Award commemorates the late Joseph M. Chase and honors an individual who has shown outstanding personal achievement in improving the knowledge, safety, and dignity of the Aircraft Technician. On March 30, Flight Safety Foundation CEO and President Sir Stuart Matthews presented FAA Aviation Safety Inspector William O'Brien with the prestigious Joe Chase Award for his many accomplishments in the field of aviation maintenance. O'Brien has conducted more than 760 FAA safety meetings attended by more than 100,000 mechanics since 1985. He has published over 180 maintenance related articles on FAA regulations in FAA and industry trade magazines. He has written more than 20 FAA Advisory Circulars. The creator of the FAA Charles Taylor Master Mechanic Award, O'Brien has received numerous awards himself.

The late Joseph M. Chase was a maintenance technician who became the first director of what was then Flight Safety Foundation's maintenance and equipment division and, in 1953, the first editor of the *FSF Aviation Mechanics Bulletin*.

MAJOR MILESTONE FOR WIDE AREA AUGMENTATION SYSTEM (WAAS)

In a move that provides more precision, all-weather approaches and increases capacity at thousands of the nation's general aviation airports, the U.S. Department of Transportation's Federal Aviation Administration (FAA) announced that Wide Area Augmentation System (WAAS) use will be extended to 200 feet above an airport's surface.

WAAS is a satellite-based navigation system designed to improve the accuracy, availability and integrity of signals from Global Positioning System (GPS) satellites. Before WAAS, the U.S. did not have the ability to provide horizontal and vertical navigation for precision approach operations for all users at all locations. WAAS will improve capacity and safety and will eventually reduce operations costs for the FAA by enabling the removal of a portion of existing ground-based navigation infrastructure.

"WAAS moves us another step closer to a satellite-based airspace system," said FAA Administrator Marion C. Blakey. "Less reliance on a ground-based infrastructure will result in improved safety, including enhanced approach and landing operations in marginal weather."

The FAA plans to make these vertical approaches available at airports where there are no instrument landing systems. These lower minima may require more stringent requirements for some airfields. Those airports that do not have the appropriate conditions for vertical approaches may require additional infrastructure and airspace upgrades. WAAS will be available to all pilots whose aircraft are equipped with the appropriate avionics, both general aviation pilots and commercial operators.

The first procedures that allow operations down to 200 feet will be published in 2007. The FAA currently has more than 300 vertical guidance procedures and is expecting to publish 300 additional procedures in 2006.

Originally commissioned in July 2003, WAAS was approved to provide vertical guidance down to 350 feet.

Localizer performance with vertical guidance procedures down to 250 feet was later developed to take advantage of the increased performance provided by WAAS. Over the past two years, WAAS has provided coverage to roughly 99 percent of the continental United States and has been available 99.87 percent of the time.

ATTENTION LOS ANGELES TAC/FLYWAY USERS

The 52nd edition of the Los Angeles TAC/Flyway has been reprinted to depict corrected Flyway information through the Los Angeles Class B airspace. The reprinted chart will retain its original edition number, 52, and effective date, December 22, 2005. However, a blue dot will be placed along the top edge of the front panel. Previously issued copies (without the blue dot) are to be destroyed once the blue dot chart is available. Users who purchased their chart from an agent may obtain an updated chart from their point of purchase at no additional charge. Until then, refer to the graphic found at the FAA's Special Notice's Web site, <http://www.naco.faa.gov/index.asp?xml=naco/special> when planning to fly through the Los Angeles Class B airspace. This Special Notice may be downloaded and circulated as needed.

The 53rd edition of the Los Angeles TAC/Flyway will be published on July 6, 2006.

OFFICIAL GUIDES FOR PILOTS AND TRAINERS

The federal government publishes a lot of aviation related information. This special collection of official government publications will be of benefit to the new student pilot as well as the old professional. From sport pilots to instructors, here is something for everyone. These publications are available from the U.S. Government Printing Office. To order online, contact <http://bookstore.gpo.gov> or call at 1-866-512-1800.

Airplane Flying Handbook (2004) - Designed as a technical manual to introduce the basic pilot skills and knowledge essential for piloting airplanes. Provides information on transition to other airplanes and operation of various airplane systems. Stock #: 050-007-01365-5. Price: $44.00

Aviation Weather Services - Explains weather service in general and the details of interpreting and using coded weather reports, forecasts, and observed and prognostic weather charts. This publication can also be used as a source for study for pilot certification examinations. Stock #: 050-007-01329-9. Price: $30.50

Weather For Aircrews - Familiarizes the aircrew member with fundamentals of weather. Serves as a text for undergraduate pilot and navigator training programs, all United States Air Force instrument refresher training and flight instruction programs, and various unit and individual flying training programs. Provides weather guidance for visual and instrument flight under most circumstances. Stock #: 008-070-00718-5. Price: $23.00

Amateur-Built Aircraft and Ultralight Flight Testing Handbook - Presents suggestions and safety related recommendations to assist amateur and ultralight builders in developing individualized aircraft flight test plans. Stock #: 050-007-01087-7. Price: $9.50

Balloon Flying Handbook (2001) - Designed to introduce basic pilot knowledge and skills essential for piloting balloons. Also introduces pilots to the broad spectrum of knowledge needed as they progress in pilot training. Stock #: 050-007-01313-2. Price: $17.00

Flight Check! The Story of FAA Flight Inspection - Traces the history of flight inspection, instrument flight procedures, and aeronautical charting from the early days of aviation to today. Stock #: 050-007-01342-6. Price: $29.00

Student Pilot Guide - This authoritative guide provides information on general procedures for obtaining FAA Student, Recreational, and Private Pilot Certificates. Stock #: 050-007-01265-9. Price: $3.00

Sport Pilot, Practical Test Standards for Weight Shift Control, Powered Parachute, Flight Instructor (December 2004) - Establishes the standards for the knowledge and skills necessary for the issuance of a Sport Pilot Certificate. Stock #: 050-007-01369-8. Price: $12.00

Sport Pilot, Practical Test Standards for Airplane, Gyroplane, Glider, Flight instructor (December 2004) - Establishes standards for the knowledge and skills necessary for the issuance of a Sport Pilot Certificate. Stock #: 050-007-01367-1. Price: $14.00

Sport Pilot, Practical Test Standards for Airplane, Gyroplane, Glider, Flight instructor (December 2004) - Establishes standards for the knowledge and skills necessary for the issuance of a Sport Pilot Certificate. Stock #: 050-007-01367-1. Price: $14.00

Sport Pilot, Practical Test Standards for Airship, Balloon, Flight Instructor (December 2004) - Provides standards for the knowledge and skills necessary for the issuance of a Sport Pilot Certificate. Stock #: 050-007-01368-0. Price: $11.00

Practical Test Standards for Powered Parachute (PPL and PPS), Weight Shift Control (WSCL and WSCS) (December 2004) - Establishes standards for private pilot certification practical tests for the powered parachute category (land and sea) and weight shift control category (land and sea). Stock #: 050-007-01370-1. Price: $9.00

Editor's Runway

from the pen of H. Dean Chamberlain

Based upon the sign at the main entrance to the Sun 'n Fun Fly-In in Lakeland, Florida, the air show season has started. The sign welcoming visitors to the Fly-In states, "The air show season starts here." Since the Fly-In ended April 10, the air show season is off to a good start.

After spending three days at the fly-in and traveling from Washington, DC, to Tampa, Florida, and back, I would like to add a few personal observations about my travels at the start of the air show season. First, I want to recognize the many volunteers who work and support air shows and fly-ins in general. One of the major benefits of a major fly-in, such as Sun 'n Fun and the Experimental Aircraft Association (EAA) convention and fly-in "AirVenture" at Oshkosh, Wisconsin, later this year, is the opportunity for visitors to not only see and learn about their favorite aircraft and the latest electronic marvels for the cockpit, but to be able to attend the forums and training sessions put on by subject matter experts. Although it seems to me that the forums and training session tents are becoming harder and harder to find each year as more and more factory aircraft and kit aircraft take center stage, there are still valuable educational and safety programs being conducted at many of the larger fly-ins. From how to install fabric on an airframe to how to cut composite material to build the latest go-fast aircraft to working with sheet metal or how to design your own wiring harness, there are classes for every homebuilder and aircraft owner that address specific areas of aircraft construction and maintenance. So if you are planning on building your own aircraft and want to see a similar model or want to talk to an expert on a particular type of aircraft or part of an aircraft, I recommend you attend one of the fly-ins in your area and check out its forum and training schedule. You will be glad you did.

An important part of all major air shows and fly-ins is the support provided by the FAA controllers, safety inspectors, and administrative folks supporting the event. Some of that support reaches all the way back to FAA Headquarters in Washington, DC. An example of that type of Washington support is the new (March 2006) FAA air show safety guidance provided in chapter 49 of FAA Order 8700.1. The revised air show chapter sets the minimum safety standards for the flight segment at any air show or exhibition. The order explains how close various types of aircraft can come to the crowd line. The faster the aircraft, the further it must remain from the crowd during certain maneuvers. Basically, the designated flight paths and minimum distances are there to provide a safe impact area or debris field for the aircraft in case of an accident that is a safe distance from the crowd. This is part of the FAA's responsibility of protecting those on the ground watching an air show. Safety is also why the aviation safety inspectors check participating aircraft and pilots for compliance with appropriate certification and currency requirements.

Another way the FAA works to protect those attending a major event is by publishing a *Notice to Airmen* (NOTAM) that outlines any unique operating procedures or closures during the event. By observing the procedures outlined in the NOTAM, pilots not only can expedite their flights into and out of an event, but they can increase the safety of all by carefully observing the NOTAM procedures. An example of how not fully complying with a NOTAM can cause problems was explained to me by one of the FAA air traffic controllers working at the Sun 'n Fun Lake Parker initial arrival point. Aircraft are expected to approach the Lake Parker initial arrival point, a power plant located along the east side of the lake, from the east. However, one of the controllers said they occasionally have an aircraft arriving from the west wanting to enter the published procedure. The problem was this west arrival was in direct head-on conflict with aircraft following the procedure from the east. Then the controllers had to work harder trying to work this stray aircraft into the published procedure. This is why everyone planning on flying to an air show or fly-in with published procedures needs to comply with the published routing and altitude information to ensure the safety of all.

As the sign said, the air show season has started. I hope all of you can attend at least one air show this season. You might be surprise at what you can learn and see. Have a safe 2006 flying season.

U.S. Department
of Transportation

**Federal Aviation
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800 Independence Ave., S.W.
Washington, D.C. 20591

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